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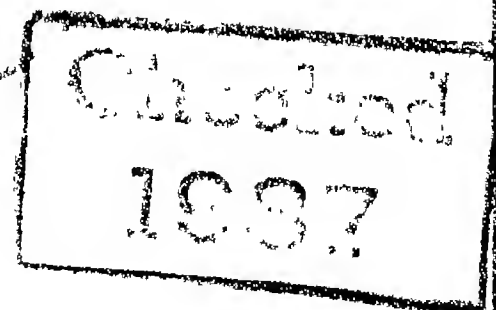
# The NEW UNIVERSAL ENCYCLOPEDIA

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VOLUME II



MONK - PEKA

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## VOLUME



**Monk** (Lat. *monicus*, alone). Solitary person, and specifically a male member of a monastic community. Originally the word was applied to hermits who passed their lives in solitude in desert places. Later these solitaries were collected in villages or lauras, where they dwelt apart, but met for divine worship and were under the control of an abbot. From this developed the practice of living in community in a coenobium or monastery. After the rise of the friars the term monk was restricted to members of the older orders of enclosed monks.

**Monk**, GENERAL GEORGE. See Albemarle, 1st Duke of.

**Monkey**. Popular name for all mammals of the Order Primates, sub-order Pithecoidea, with the exception of man and the anthropoid apes. Monkeys generally are distinguished from man and apes by their smaller size, the shape of the molar teeth, and a narrow, laterally compressed breastbone. It is usual to divide the monkeys into two great families, the Catarrhini of the Old World and the Platyrrhini of the New. The main points of distinction are that the nostrils of all the American species are separated by a broad septum and more laterally situated than in those of the Old World; that they have four more teeth; and that none has the cheek pouches and the callosities on the buttocks that many Old World species possess. Many have prehensile tails, which none of the Old World species has. The New World monkeys are on the whole less agile than the Old World monkeys, nor are they as intelligent.

Monkeys occur throughout Asia, Africa, and the hotter parts of the American continent. In Europe they still linger on the Rock of Gibraltar, but were formerly much more widely distributed, the fossil remains of one species of macaque occurring in Essex. Nearly all monkeys are arboreal in habit. They are usually found in small companies under the leadership of old males. They may be regarded as omnivorous, fruit, nuts, and leaves constituting their chief diet; but they eat insects and small birds, and few can resist the temptation of robbing a bird's nest of its eggs. With the exception of a few of the larger species, monkeys are timid and inoffensive in disposition.

Economically they are of small importance, though the skins of certain species are used as fur, and in some districts they are eaten

as human food. They often do damage to orchards and growing crops.

**Monkey Flower** (*Mimulus luteus*). Perennial riverside herb of the family Scrophulariaceae. Native to N. America, it has oval-oblong, coarsely toothed leaves, and large yellow tubular flowers with widely extended mouth. Some varieties are richly spotted, or blotched with crimson, maroon, or purple. *M. moschatus*, a much smaller, more delicate plant, is the familiar musk of window-gardens.

**Monkey Gland** TREATMENT. See Voronoff, Serge.

**Monkey Pot** (*Lecythis ollaria*). Large tree of the family Lecythidaceae, native to tropical America. It has alternate, leathery leaves, and large six petalled flowers. The fruit is a hard, woody capsule with a distinct lid, and of sufficient size to be used as a water-vessel. When the large, bitter, hard-shelled seeds are ripe, the lid falls off to allow their escape. From *L. zabucajo* come the Sapucaya nuts, which are larger than, and superior to, Brazil nuts. The bark of *L. ollaria* consists of many thin layers of a papery material, which the Indians separate and use for cigarette wrappers.

**Monkey Puzzle Tree**. See Chile pine (*Araucaria araucaria*).

**Monkey Trial**. Popular name given to a legal action heard at Dayton, Tennessee, July 10-21, 1925, when John T. Scopes, a teacher of biology at the local high school, was prosecuted for teaching the theory of evolution to a boy of 14. The state legislature had just passed a law forbidding teachers in any state educational establishment to teach "any theory that denies the story of the Divine creation of man as taught in the Bible." Scopes was deliberately challenging this law. The case attracted widespread attention as a direct con-

flict between religion and science, science being popularly accepted as supporting the theory that man is descended from monkeys. Enormous publicity, much of it in gross taste, was given by the newspapers, and Dayton, nicknamed "Monkeyville," was crowded for the period of the trial. W. J. Bryan (*q.v.*) appeared for the prosecution. Clarence Darrow, a well-known agnostic, for Scopes. A feature of the trial was the merciless questioning of Bryan on his own fundamentalist religious beliefs by Darrow, conducted throughout an afternoon so hot that the court was held out of doors. The judge eventually stopped this examination and expunged it from the record. As no scientific evidence was forthcoming Scopes was found guilty and fined. Bryan died on July 26. The defence later brought the case before the state supreme legislature which again found for the prosecution and forestalled a further appeal by freeing Scopes on a technical point.

**Mon-Khmer**. A sub-family of agglutinative languages spoken in S.E. Asia. It forms with the Munda sub-family the Austroasian family. The Mon occupied the Irrawadi valley before the Burmese immigration; the Khmer are a mixed Indonesian people in Cambodia. The languages of the Mon-Khmer sub-family are spoken by probably half a million people. Related dialects, spoken by unenumerated aboriginal tribes in Indo-China, are remnants of the speech dominant in Further India before the Tibeto-Chinese advent.

**Monkhouse**, ALLAN NOBLE (1858-1936). British writer. Born at Barnard Castle, May 7, 1858, and privately educated, he was with the Manchester Guardian 1902-32, first as dramatic critic, later as literary editor. He associated himself with the repertory theatre movement in Manchester and elsewhere. He died Jan. 10, 1936. An exquisite stylist, he is remembered for novels and sketches of Manchester life, e.g. Farewell Manchester, and for war plays, notably The Conquering Hero, 1924.

**Monkhouse**, WILLIAM COSMO (1840-1901). British poet and critic. Born in London, March 18,



Monkey Pot, leaves and fruit. Inset, seed, which has a hard shell

1840, and educated at S. Paul's school, he entered the board of trade in 1857, and eventually became an assistant secretary. He died July 2, 1901. Monkhouse wrote a novel, *A Question of Honour*, 1868, but his best work was probably done as an art critic. He wrote a *Life of Turner*, 1879; *The Italian Pre-Raphaelites*, 1887; *In the National Gallery*, 1895; *British Contemporary Artists*, 1899. His verses included *The Christ upon the Hill*, a ballad. Two other volumes are *A Dream of Idleness*, 1865; *Corn and Poppies*, 1890.

**Monkland Canal.** A disused waterway of Scotland. It runs from Port Dundas on the Forth and Clyde Canal to Coatbridge. It is included in the Forth and Clyde navigation, and its length is 13 m. Begun in 1761, it was finished in 1790, to carry the coal of the Lanarkshire coalfield. In 1846 it was acquired by the Forth and Clyde Canal, and in 1867 the united system passed into the hands of the Caledonian rly. (later L.M.S.). Monkland is the name of two large parishes in Lanarkshire, New and Old. Both are on the N. Calder, in a coal mining area.

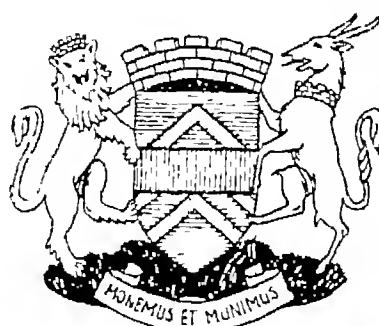
**Monkshood** (*Aconitum napellus*). Perennial herb of the family Ranunculaceae. A native of Europe and Asia, it has a black, spindle-shaped rootstock, and the alternate leaves are cut into sharply toothed lobes. The large, hood-shaped, dark-blue flowers are clustered round the upper part of the stem. The whole plant is virulently poisonous, and from its root is obtained the drug aconitine. See *Aconite*.

**Monkswell, ROBERT PORRETT COLLIER, BARON** (1817-1886). British law officer. Born at Plymouth, June 21, 1817, and educated there and at Trinity College, Cambridge, he was called to the bar in 1843 and was Liberal M.P. for Plymouth 1852-1871 and Q.C. from 1854. Solicitor-general 1863-66, he was appointed attorney-gen. 1868, and a member of the new judicial committee of the privy council 1871, having qualified by sitting for a few days as judge in the court of common pleas. He was made a peer in 1885, and died Nov. 3, 1886.

**Monkwearmouth.** District of Sunderland, Durham, England. Formerly a village, it stands on the N. side of the Wear, with a rly. station. A bridge over the river connects it with Sunderland. Historically it is noteworthy because in the 7th century Benedict Biscop founded a Benedictine monastery here. The parish church of S. Peter stands on the site, and

contains a porch and other remains of the monastic church. Monkwearmouth began to be an industrial centre about 1775, when shipbuilding started. Other industries are ironworks and coal mines.

**Monmouth.** Borough and county town of Monmouthshire, England. It stands at the junction



Monmouth arms

of the Monnow and the Wye, 19 m. S.W. of Hereford, and is almost surrounded by hills. The chief buildings are the restored church of S. Mary, the old church of S. Thomas Becket, the shire hall, and Great Castle House built of stone from the partly demolished castle. There is a grammar school founded in the 17th century and the town has statues of Henry V. who was born in the castle here, and of C. S. Rolls, the aviator, whose family was long connected with Monmouth. Monnow bridge is protected by a 13th century gateway. The bor. gives its name to a co. constituency.

Monmouth was fortified by the Saxons, and continued to be a border fortress as long as the Welsh were hostile to the English. It became a borough in the 13th century, but was not granted a charter until 1550. It was first represented in parliament in the 16th century. It was long famous for the caps made here, mentioned by Shakespeare (*Henry V.*). Market days, Mon. and Fri. Pop. (1951) 5,438.

**Monmouth, JAMES SCOTT, DUKE OF** (1649-85). English rebel. The son of Charles II by Lucy Walters he was born at Rotterdam, April 9, 1649, during his father's exile. The king provided for him, although some doubted the paternity, and after the Restoration had him at court. In 1663 he was made duke of Monmouth, and in the same

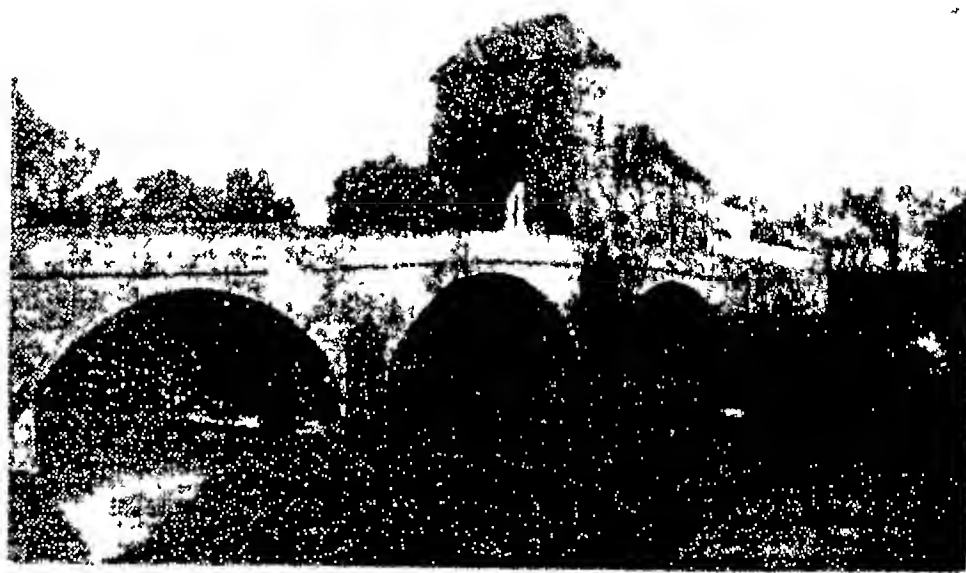


James Scott, Duke of Monmouth

year was provided for by a marriage to Anne Scott, wealthy countess of Buccleuch, being created duke of Buccleuch. He saw service with the fleet against France in 1678, and against the Covenanters, 1679.

When the question of the succession to the throne became urgent, Monmouth was taken up by Shaftesbury and those who desired to exclude James, duke of York. Public feeling ran high, and at one time Monmouth was in banishment, at another he was hailed as the coming king. In 1683, just after the Rye House plot, in which he was concerned, the duke took refuge in Holland, where he was when Charles died and James became king. In Holland Monmouth met Argyll and other malcontents, and an expedition to England was arranged. The duke landed at Lyme Regis and was greeted as King Monmouth in the

western counties. With a rabble of half-armed and untrained men he led an attack on the royal troops at Sedgemoor during the night of July 5-6, 1685. His followers were hopelessly defeated, and he fled to the New Forest, but was taken at Ringwood and beheaded in London, July 15. Monmouth left two sons: James, earl of Dalkeith, the ancestor of the dukes of Buccleuch; and Henry, earl of Deloraine. Apart from charm and a striking appearance, the duke had little to recommend him. See *Sedgemoor*; consult James, Duke of Monmouth, E. D'Oyley, 1938.



Monmouth. Fortified 13th century gateway on the bridge over the Monnow



Monmouth. Silver medal struck by his adherents to commemorate the execution of the duke  
British Museum



**Monmouthshire.** Co. of W. England, on the Welsh border, and for some purposes considered with



**Monmouthshire arms** where several summits exceed 1,500 ft., the highest being Chwarel y Fan, 2,228 ft., in the Black mts. The coast is protected by earthworks.

The chief rivers are the Wye, Usk, Ebbw, Rhymney, and Monnow. Monmouth is the co. town, other boroughs being Newport and Abergavenny. Tredegar, Abertillery, Abersychan, Ebbw Vale, Abercarn, Bedwellty, Blaenavon, Llantarnam, Panteg, Pontypool, Risca, Rhymney, and Chepstow are other places. The chief industry is coal mining, the S. Wales coalfield stretching into the county. Coal is found in the valleys in the W., where populous towns have sprung up. Wheat, rye, and other crops are grown, but much land is given up to sheep. Orchards are plentiful. The county also contains magnificent scenery. It is served by rlys. and canals. The co. is in the Oxford circuit and Monmouth diocese, and forms five co. and one bor. constituencies.

Originally part of the Welsh kingdom of Gwent, Monmouthshire remained in Wales until made a shire in 1536. It had been conquered by King Harold, and herein the Normans built castles which for long were maintained to protect England from the inroads of the Welsh. The most notable were perhaps those of Chepstow, Raglan, Caldicot, Abergavenny, Penhow, Monmouth, and Skenfrith. The county contains Tintern and Caerleon. Area 529 sq. m. Pop. (1951) 425,115.

In literary matters the co. claims Geoffrey of Monmouth and William Thomas, Welsh poet. Jeremy Taylor was imprisoned in Chepstow Castle. The Wye and Tintern Abbey inspired famous lines by Wordsworth. W. H. Davies was born at Newport and uses place-names of this co. in his verse.

**Monmouthshire Regiment.** Territorial regiment of the British army. Formed in 1860, it served with the S. Wales Borderers in the S. African War and helped to take Johannesburg. When the Territorial Force was established in

1907, its three battalions became the Territorial ones of the S. Wales Borderers. One of the first T.A. units to land in France in 1914, it served with the 29th div. throughout the First Great War. Between 1915 and 1918 eleven battalions were raised. Two service battalions were with the 21st army group in France, the Netherlands, and Germany in the Second Great War.

**Monnier, PHILIPPE** (1864–1911). Swiss novelist, the son of Marc Monnier (1829–85), playwright and translator. A native of Geneva, born Nov. 2, 1864, he wrote in French, and took a place with Edouard Rod, Isabelle Kaiser, and other Swiss writers accepted in French literature. His chief books are *The Quattrocento*, 1901; *Causeries Genevoises*, 1902; *Venice in the 18th Century*, 1907. He died July 21, 1911.

**Monobel.** Coal mining explosive. It is 80 p.c. ammonium nitrate sensitised with 10 p.c. nitroglycerine absorbed on 10 p.c. wood meal.

**Monoceros** OR THE UNICORN. Large constellation lying in the celestial equator E. of Orion. It is without any conspicuous stars, but is noted for its multiple stars, star clusters, and nebulae.

**Monochlamydeous** (Gr. *monos*, alone, single; *chlamys*, cloak). Term applied to plants whose flowers have a single envelope or calyx. See Flower.

**Monochord** (Gr. *monos*, single; *chordē*, string). Musical instrument with a single vibrating string. Usually it is regarded as a device for measuring or comparing frequencies. The fundamental frequency ( $n$ ) of a stretched wire passing over two "bridges" distance  $l$  apart is given by

$$n = \frac{1}{2l} \sqrt{\frac{T}{m}},$$

where  $T$  is the tension of the wire and  $m$  its mass per unit length.

**Monochrome** (Gr. *chrōma*, colour). In art, a picture executed in different tints of one colour, the tints representing light and shade. Thus a sepia (*q.v.*) drawing is a monochrome, but the term is not confined to any one medium.

**Monocline** (Gr. *klinein*, to incline). In geology, term used for a change in inclination or dip of the strata of rocks, which afterwards continue in their general original direction. Such sudden changes in rock strata occur in the Rocky Mts. on a large scale. See Anticline; Geology; Rocks; Syncline.



Monmouthshire. Map of the English county on the border of South Wales

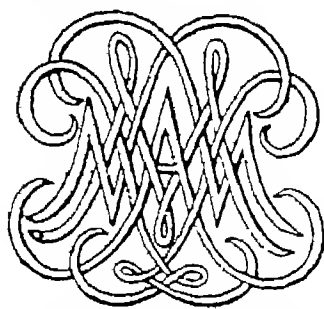
**Monocotyledon** (Gr. *monos*, single; *cotyledon*, cup-shaped cavity). One of the two well-marked divisions of the Angiosperms, or flowering plants, the other being dicotyledon (*q.v.*).

**Monoculture.** Term for a system of agriculture in which the land in a given area is devoted to one crop continuously. The cultivation of rice in the Nile delta and the rubber plantations of the Far East are examples in the Old World; but monoculture has been far commoner on the virgin soil of the New: *e.g.* cotton in south-east U.S.A.; wheat in the middle west of Canada and the U.S.A.; sugar and coffee in Brazil. Exhaustion of the soil, overproduction, or a change in demand brings ruin and even starvation to cultivators. There is a slow but steady move away from monoculture, particularly in the cotton area of the U.S.A. To avoid the dangers of monoculture the E. Africa ground nut growing scheme started by the British govt. in 1947 included development of a suitable rotation of crops.

**Monoecious.** Botanical term. It is applied to plants, *e.g.* *Fucus spiralis*, which form in one individual both male and female gametes. It is also loosely applied to flowering plants, *e.g.* hazel, which form both stamen and carpels neither of which are really sexual though they contain gametophytic structures.

**Monogenism** (Gr. *monos*, single; *genos*, kind). Theory attributing to all mankind descent from one original stock, and specifically from a single pair. Its alternative, polygenism, accounts for the physical diversity of the human race by postulating for man a plural origin. See *Man*.

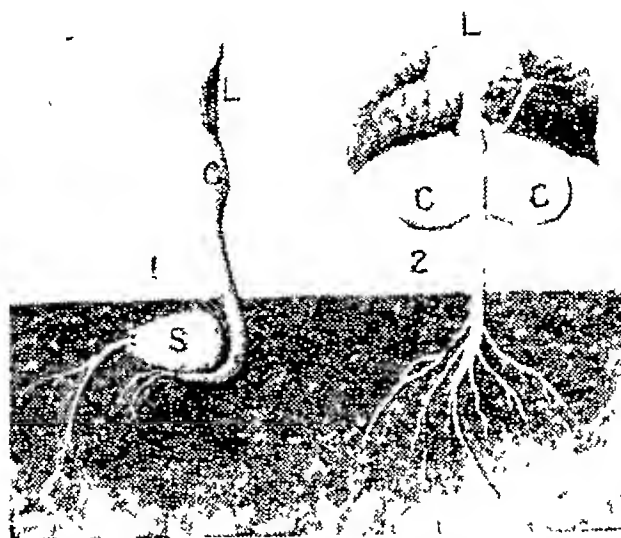
**Monogram** (Gr. *monos*, single; *gramma*, letter). Term usually applied to a combination of two or more letters into a single cipher, used as a kind of heraldic device in lieu of crest or arms on seals, carriages, etc.; by artists and craftsmen



Monogram combining letters ALNM

for authenticating their work, *e.g.* pictures and pottery; in commerce as trade-marks; and, generally, for various similar purposes. A familiar example is the sacred monogram embroidered on ecclesiastical vestments. See *Labarum*.

**Monograph** (Gr. *monos*, single; *graphein*, to write). Book or pam-



**Monocotyledon.** Diagrammatic representation of the difference between seedlings of (1) Monocotyledon, and (2) Dicotyledon. 1. Germinated seed of maize, S, with single cotyledon, C. 2. Seedling of bean, with two cotyledons (C C). The first true leaves, L, are seen above the cotyledons

phlet, giving an account or description of some single thing or connected series of things.

**Monolith** (Gr. *monos*, single; *lithos*, stone). Stone block, usually monumental and of large dimensions. It may be an unhewn menhir; the capstone or support of a megalithic monument; a hewn obelisk; a sarcophagus; a stone used in temple building; a statue. Two statues of Rameses II at Thebes weighed 900 tons each. There are roof-beams 40 ft. long at Thebes; 170-ton lintels in Peru; a partly quarried block, 68 ft. long, of 1,100 tons at Baalbek. Huge monolithic sarcophagi in Egypt, and sculptured deities in India and Easter Island are extant. The stones which form Stonehenge (*q.v.*) are another example of ancient monoliths. See also under *Assyria*; *Carnac*; *Inca*; *Menhir*; *Stone Circle*, etc.

**Monongahela.** River of the U.S.A. Rising in Marion co., W. Virginia, it flows N.E. to its junction with the Cheat and thence N. to unite with the Allegheny at Pittsburg in forming the Ohio. About 230 m. long, its main channel is navigable throughout.

**Monophysites** (Gr. *monos*, single; *physis*, nature). Followers of a heresy which gave rise to a schism in the Eastern Churches after the Council of Chalcedon in 451, and spread widely in Egypt and Asia Minor. It taught that the divine and human natures were so intimately united in the one Christ that He is partly divine and partly human, yet that the two natures became actually one. This heresy was developed by Dioscorus, patriarch of Alexandria, and its condemnation by the Orthodox Church was rejected by the Coptic Church, which has ever since held an isolated position.

It now exists only in name, the actual teaching of the Coptic Church and other Jacobite bodies being apparently orthodox. See *Jacobite Church*.

**Monoplane.** In aeronautics, name given to an aeroplane with only one main supporting surface. It is more efficient in lifting power for each square foot of surface than the biplane (*q.v.*), and is aerodynamically more suited for high speeds with all the strengthening members and bracing usually inside the structure. Although the wing area must necessarily be much greater to carry a given load than in machines with more than one wing, one of the most successful pioneer aircraft was the monoplane of Blériot, who crossed the English Channel in 1909, and following a period, lasting throughout the First Great War and for some time after, when the biplane was pre-eminent, monoplanes almost monopolised the field of aeroplane design. The success of the Supermarine-Napier monoplane in the Schneider trophy contest in 1927, and Lindbergh's transatlantic flight in a monoplane in the same year, established the supremacy of the monoplane. See *Aeroplane*; *Biplane*.

**Monoploid.** Cytological term. It is applicable primarily to a complete set of chromosomes in which there is not more than one of a kind, and hence to the nuclei containing such a set and so to organs and organisms having such nuclei.

**Monopoli.** Seaport of Italy, in the prov. of Bari. It stands on the Adriatic, 8 m. by rly. S.E. of Polignano, and 26 m. S.E. of Bari. It has a castle, built by Charles V in 1552, and a cathedral. Oil, wine, flour, fruit, etc., are exported, and woollen and cotton goods manufactured. Pop. est. 23,000.

**Monopoly** (Gr. *monos*, single; *pōlein*, to sell). The sole right or power to trade in a particular commodity or a specified area. In medieval times the Crown sold monopolistic trading rights to the burgesses of various cities. Later, particularly in Tudor and Stuart times, the grant by the Crown of monopolies in necessities to reward favourites caused much bitterness. Ultimately, by an Act of 1639, they were forbidden, and survived only in the grant of such royal charters as those of the East India company and the Bank of England (*qq.v.*), and letters-patent granted to inventors.

Monopolies are commonly divided into (a) natural monopolies,



forms of trading in which competition would be unnatural; (b) legal monopolies, those which are legally established as a means of advancing the public good (for example, patents, copyright—to encourage invention and authorship—registered trade-marks and designs, professional registration such as that of medical practitioners, dental surgeons, solicitors, barristers, and patent-agents, national undertakings established by parliament, such as the B.B.C., the Electricity Commission, the National Coal Board, etc.); (c) artificial monopolies, *i.e.*, those brought about by the amalgamation of competitive businesses and the emergence of a single bulk supplier instead, *e.g.* in the U.K. The term state monopoly is used to denote a trade or industry reserved to itself by a government either as an instrument of taxation or because it is believed that the commodity or service can be provided more cheaply in that way or is too important to leave in private hands (*e.g.*, the manufacture of matches, tobacco, and cigarettes in many European countries, the operation of posts, telegraphs, and telephones in the U.K.). The variety of state monopolies and legal monopolies has greatly increased through nationalisation and the establishment of *ad hoc* industrial and trading bodies.

In economics, the so-called law of monopoly price states that a monopolist seeks to fix the selling price at the level which will maximise his net profit.

In the U.K. the Monopolies and Restrictive Practices Act, 1948, set up in 1949 a commission to investigate allegations of monopolistic practices referred to it by the board of trade. See Trust.

**Monorail.** System of transport in which a single rail is used to support the weight of a carriage or truck. A monorail system may have certain lighter guiding rails, which are, however, not absolutely essential to the system, the whole weight of the carriages being borne on one rail. It was early realized that a single rail offered the advantages of cheapness, concentration of weight, high speed, and possibly low cost of upkeep, but the system did not prove a commercial success generally. In 1882 a single rail on A-shaped supports was constructed in Algeria, and in 1886 a line between Listowel and Ballybunion was constructed in Ireland, the engine possessing duplex boilers, one on each side of the rail. A

similar rail has been successfully operated by electricity at the Ria mines in France. This A-shaped system of supporting the rail is known as the Lartigue system, after its inventor.

In the Langen system the carriages are suspended from an overhead rail, and such a line, built between Barmen and Elberfeld, proved successful. The system was worked by electricity.

In the most important development of the monorail system a gyroscope provides the balancing force. In 1907 Louis Brennan (*q.v.*) exhibited such a system before the Royal Society. A car was supported on a single track laid on the ground, and kept in equilibrium by a gyroscope, with flywheels moving at a speed of 7,500 revolutions per minute. A carriage containing 40 passengers was successfully operated in 1909, the gyroscopic wheels revolving in a vacuum at 3,000 revolutions per min. Richard Scherl, in Germany, also carried out, in 1910, a series of experiments with the gyroscopic system, but none of the systems went beyond the experimental stage. See Gyroscope; Railways.

**Monotectic.** Type of equilibrium found in the constitution diagrams of certain binary alloys. In effect the system consists of a normal eutectic, in which the amount of one phase present is very small. Certain alloys in the central portion of the diagram exhibit a unique phenomenon; as the molten alloy is cooled, at a certain temperature, not easily determined, the liquid divides into two liquid phases of different compositions. When a certain temperature is reached, the compositions change, until the eutectic can be deposited. There are thus present at one time three phases, two liquids and one solid, so that the system is invariant and the diagram has a horizontal line at that point. Monotectics are generally formed between two metals of very different melting points and the eutectic occurs very near the melting point of the lower melting metal. As an example the system copper-lead may be cited. See Alloy; Constitution Diagram; Eutectic; Metallography.

**Monotheism** (Gr. *monos*, single; *theos*, god). System of religious thought and practice which admits only one God. It is thus opposed to polytheism, which admits and worships many gods, and to henotheism, which wor-

ships only one God, but admits that others may exist. All theories of a dualistic origin of the universe, involving the essential evil of matter, are equally inconsistent with belief in one God. Whether monotheism is the oldest form of religion is uncertain. The very early worship of the sun and other natural objects may have originated in a vague belief in one supreme power, which was manifested in various ways, but the evidence tends in the other direction. The earliest cosmogonies known are dualistic, and indicate a struggle between the powers of good and evil. In all nations, except possibly the Hebrew, polytheism was at one time or another the prevailing religion; and even the O.T. Hebrews show a constant tendency to fall into it. See Deism; Theism.

**Monothelites** (Gr. *monos*, single; *thelētēs*, a person who wills). Followers of a heresy which arose in the Eastern Churches as the result of an attempt to harmonise orthodox and monophysite doctrines. It taught that, while in the Person of Christ there existed two natures, the divine and the human, yet those two natures did not possess separate divine and human wills, but only one will, partly divine and partly human. The heresy appears to have originated with Severus (d. 535), a deposed patriarch of Antioch. It was finally condemned by the Council of Constantinople in 680, and the decision was accepted by the Church of England at the Council of Hatfield which was held soon afterwards.

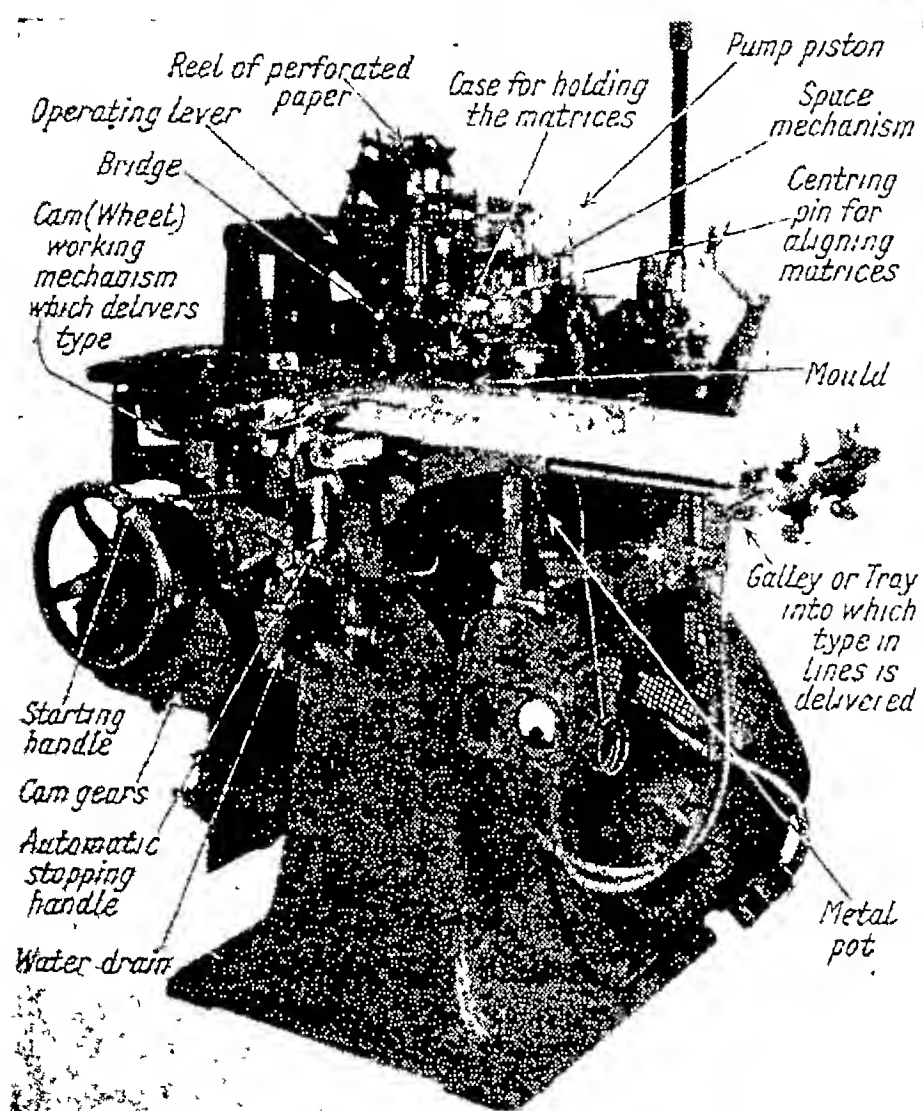
**Monotremata** (Gr. *monos*, single; *trema*, hole). Name given by zoologists to the Prototheria, the lowest surviving sub-class of mammals, found in Australasia. They include the duck-mole and the two spiny ant-eaters. These mammals have a single opening (cloaca) containing the anus and urino-genital aperture, whence the name, and are oviparous. See Mammal.

**Monotype.** Machine used by printers for setting up words from MS. into single letters of movable type—hence its name. It was invented about 1887 by Talbot Lanston, an American lawyer; in 1897 it was introduced into England, and The Times adopted it in 1909. Its product is akin to that of the hand compositor, each letter cast in a line being a distinct and separate unit, and not an integral part of a solid line like the product of the Linotype



and the Intertype. From both of these the Monotype differs, not only in mechanism, but in principle, inasmuch that alterations can be effected by hand without the recasting of an entire line, and the type itself can be readily accommodated to fit round illustrations if desired.

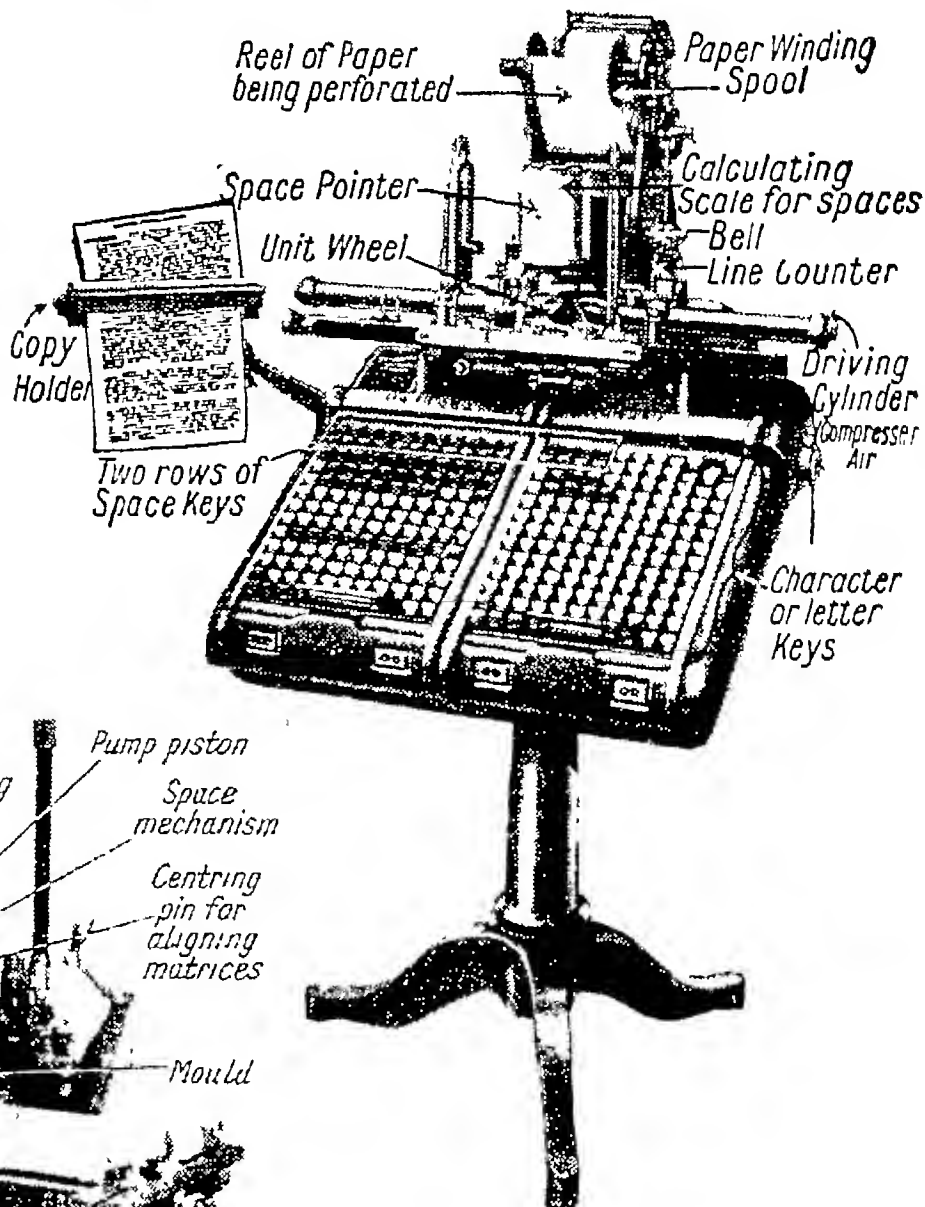
Two distinct operations are involved and two distinct machines are employed: (1) a keyboard, like a typewriter, for perforating a roll of paper somewhat on the principle of a pianola; and (2) a machine casting the single letters



**Monotype.** The upper picture shows a keyboard machine for preparing a perforated paper reel, which is afterwards placed in position in the casting machine, lower picture; then, by means of compressed air passing through the perforations, the mechanism automatically casts the type, assembles it in words, and properly spaces it

of type and spaces, and automatically assembling them into words and lines.

The initial stage is effected by the operator manipulating a keyboard, the finger keys embracing all the characters of the alphabet, together with all the possible widths of spaces necessary to finish off all the lines evenly in a column or page to the same width, i.e. to justify the lines. The depression of a key perforates a hole in a reel of paper, each hole, or sometimes two, representing a space or a letter. As the allotted width of line is nearing completion, a bell automatically warns the operator, and a small drum, covered with figures and termed the justifying scale, rotates to a position controlled by the mechanism. A glance at this drum



tells the operator what space is required to justify his line, this calculation having been automatically accomplished by the scale, and the depression of the requisite key completes the line, i.e. the last perforation (actually a double one) after the bell rings will eventually mathematically adjust a line by distributing spaces equally between the words

so that the line ends evenly.

The paper reel slowly revolves in the process of perforation and rewinds itself until the operator has finished his MS. The perforated reel is then detached and fitted into the casting mechanism, which begins to produce the type at the end of the copy and works back to the beginning. The reel is passed over a chamber or cylinder containing compressed air, along the face of which is a row of about 30 tiny portholes leading to an equal number of miniature pipes.

As the reel travels over the cylinder the perforations pass over the portholes one by one, allowing the compressed air momentarily to escape and pass down the pipes to actuate stops. These, by bobbing up and down under the pressure of

the air released through the perforations, cause the case containing the dies or matrices (each corresponding to every key of the keyboard) to be moved into such a position that the matrix of any particular letter is held for the fraction of a second over a mould into which is injected molten metal, an alloy of lead, antimony, and tin. The single letter of type thus cast is automatically ejected from the mould, the succeeding matrices of the word being brought by the actions above described to the mould, one after another with lightning rapidity,

until the whole line, evenly spaced, is completed and pushed into the galley or tray in which the lines are assembled. The spacing between the words is done by means of wedges, their positions automatically controlled by the justifying or spacing perforations in the paper spool.

Matrix-cases for almost any type face and size are available, all of which are interchangeable on the casting machine. The normal matrix-case contains 225 characters and space matrices, arranged in 15 rows of 15. One monotype keyboard operator and caster attendant can do the work of five or six hand compositors. The entire body text, i.e. excluding headings and cutlines, of this Encyclopedia was set by the monotype process. See Compositor; Forme; Intertype; Linotype; Newspaper; Printing.

F. W. Clulow

**Monreale.** City of Sicily, in the prov. of Palermo. It stands on the slopes of Monte Caputo, 5 m. S.W. of Palermo. It grew up round a monastery whose church, founded in 1174 by William II, was made in 1182 the metropolitan cathedral of Sicily. It trades in wheat and olive oil. Pop. (1951) 22,583.

**Monro, HAROLD (1872-1932).** British poet. Born at Brussels, he opened on Jan. 1, 1913, at 35 Devonshire St., Holborn, the Poetry Bookshop (transferred to Great Russell Street, after the First Great War). A member of the Georgian group, he founded

the Poetry Review, 1912; and Poetry and Drama, 1913. His volumes of verse included Strange Meetings, 1917; Real Property, 1922; and The Earth for Sale, 1928. His anthology, Twentieth Century Poetry, 1929, was popular and made known the work of many writers previously neglected, *e.g.* Anna Wickham. He died March 17, 1932, and his Collected Poems, edited by A. Monro, appeared the following year.

**Monroe.** City of Louisiana, U.S.A. On the Ouachita river, 73 m. W. of Vicksburg, it is served by the Vicksburg, Shreveport, and Pacific and other rlys. It is the head of steamboat navigation on the river. The chief industry is the production of industrial carbon. It has 6-ft. dykes as flood protection. Settled in 1785, and originally called Fort Miro, it was renamed after President James Monroe (*q.v.*) in 1819, was incorporated in 1820, and became a city in 1871. Pop. (1950) 38,572.

**Monroe.** City of Michigan, U.S.A., the co. seat of Monroe co. On the river Raisin, 34 m. S. by W. of Detroit, it is served by the Lake Shore and Michigan Southern and other rlys. Situated near Lake Erie, it is a summer resort. It has flour and paper mills, agricultural implement factories, and canneries, and trades in cereals and fruit. Settled in 1783, Monroe was incorporated in 1827, and became a city in 1836. A monument dedicated to "massacre victims" commemorates an incident of the war of 1812 when redskins attached to the British forces slew U.S. soldiers. Pop. (1950) 21,467.



Monreale, Sicily. Façade of 12th century cathedral

**Monroe, JAMES** (1758-1831). American president. He was born in Virginia, April 28, 1758. He fought in the War of Independence, and in 1782, owing largely to the influence of his friend, Thomas Jefferson, he entered the

legislature of Virginia. In the congress of the confederation he specially interested himself in



James Monroe, American president

questions affecting the future of the west. He objected to the revised constitution of 1787, ranging himself with the Anti-Federalists, but later entered the senate in 1790, where he joined the party hostile to Washington.

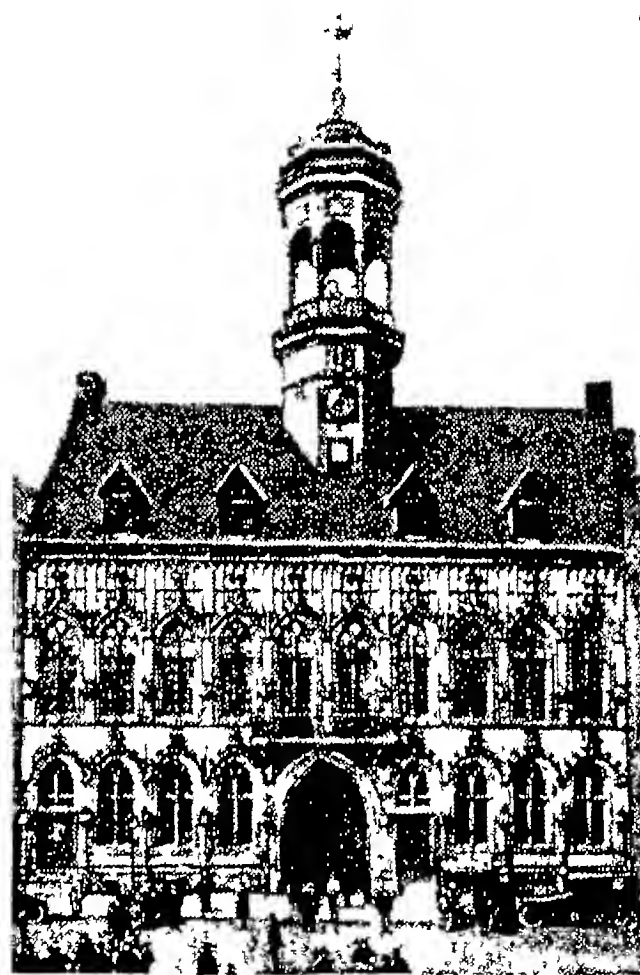
In 1794 Monroe went to France as minister, but was recalled two years later. From 1799 to 1802 he was governor of Virginia, after which he went to France and Spain to endeavour to bring about the purchase of Louisiana and Florida, accomplishing only the former purpose. During 1803-07 he was minister to Britain. Then in 1811 Monroe became again governor of Virginia, and in 1812 secretary of state, being also secretary of war during the latter part of the war with Britain. In 1816 he was elected president against Rufus King, and he filled the office for two terms, or eight years. His rule is best known for his enunciation, in 1823, of the Monroe Doctrine (*v.i.*); it was a period of great material prosperity and little internal strife. He died at New York, July 4, 1831. *See* Life, D. C. Gilman, 1909.

**Monroe Doctrine.** Principle of international policy held by the U.S.A., the root idea of which is America for the Americans. The doctrine was first formulated in a message to Congress by President Monroe in 1823, the two essential points being the following: (1) "The American Continents . . . are henceforth not to be considered as subjects for future colonisation by any European power." (2) "We should consider any attempt on their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety." The doctrine was reaffirmed by Polk in 1845 and 1848, while the protests of the U.S.A. against the interfer-

ence of the French in Mexico in 1866, and against the claims of Great Britain in the Venezuela boundary dispute in 1895, were based upon it. The doctrine does not seek to prevent European powers from enforcing just claims under international law, and Great Britain on the whole has supported the doctrine, making as it does for the security of Canada and other British territory on the American continent. *See* International Law.

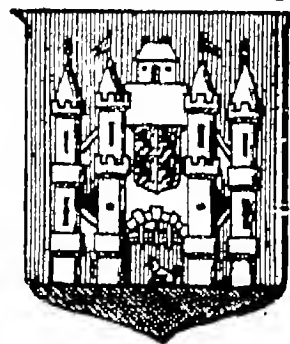
**Monrovia.** Capital of the republic of Liberia, W. Africa. It is on the sea-coast, and is a port of entry with a trade in palm nuts and dye woods. Pop. 10,000.

**Mons** (Flemish, *Bergen*). Town of Belgium, capital of the prov. of Hainault. It stands on the river



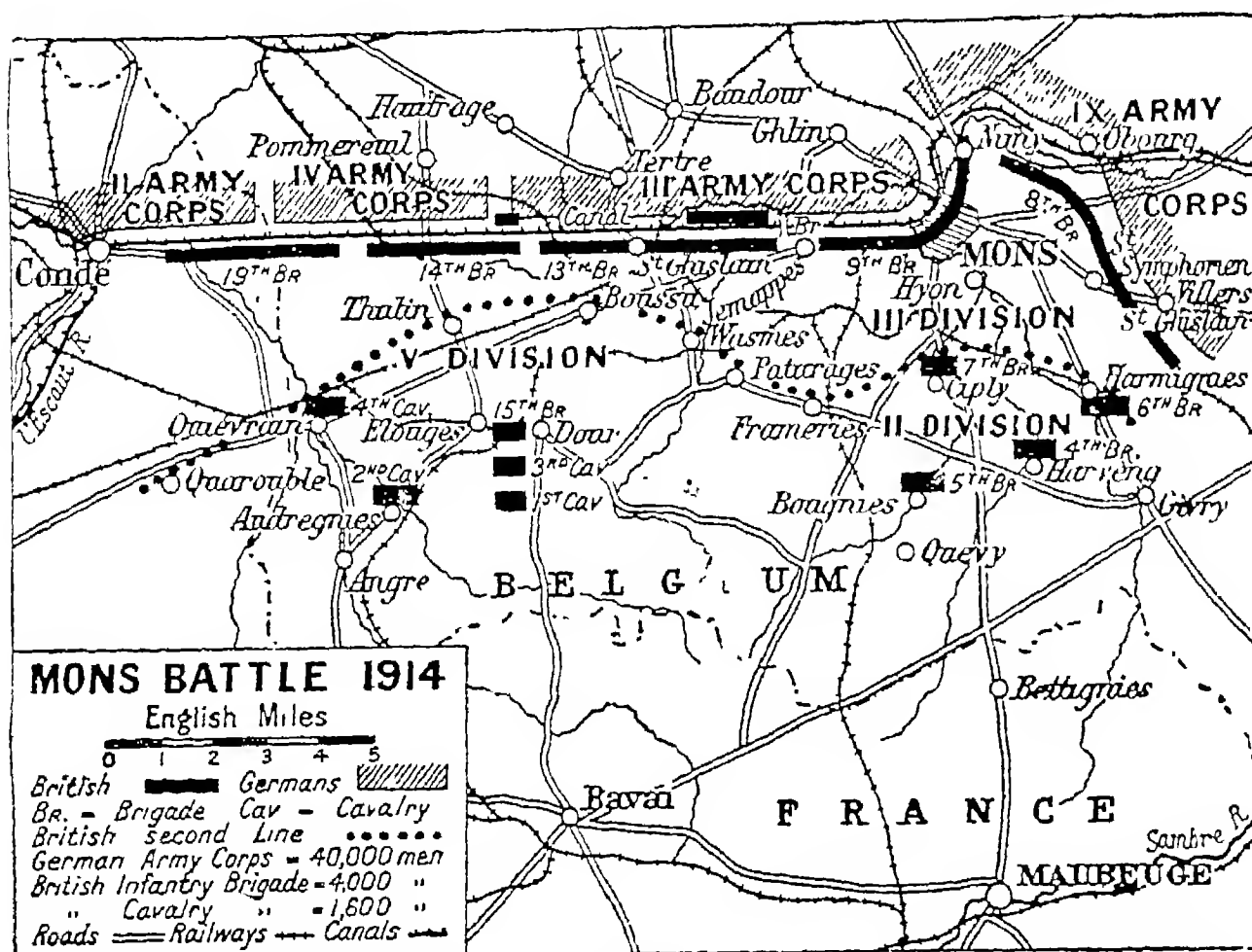
Mons, Belgium. The 15th century Town Hall

Trouille, 38 m. by rly. S.W. of Brussels, occupying a hill (whence its name) in the important coal-mining district known as the Borinage. A rly. centre of note, it is the terminus of the busy Mons-Condé Canal. Apart from its importance as an administrative centre, Mons is a centre of the local trade and has various industries, *e.g.* textiles, lace, oils, soap, and sugar, and is a military centre with large barracks. There is a school of mining. The Gothic church of S. Waudru, begun about the middle of the 15th century, has a fine interior with 16th century stained glass. The town hall, begun in 1458, is on the Grande Place, and has an ornate façade.



Mons arms





Mons. Map showing the general disposition of the opposing armies and the British first and second lines

Mons, believed to have been originally a Roman fortress, grew in the 8th century round a monastery founded by S. Waudru, or Waltrudis, a daughter of one of the counts of Hainault. It was in the possession of these counts, and of Spain, France, and Austria successively. It has stood many sieges, having been captured by Louis of Orange in 1572; by Louis XIV, 1691 and 1701; by Prince Eugène, 1709; by Saxe, 1746; and by Dumouriez, 1792. It was the capital of the French dept. of Jemappes from 1794 to 1814, after which it became part of the Netherlands. Its fortifications were finally demolished in 1862. Round the town was fought the famous battle of Aug., 1914, and it formed an important military centre for the Germans during their occupation of Belgium. It was recaptured by Canadian troops, Nov. 11, 1918. In the Second Great War it was occupied by the Germans after their breakthrough at Sedan in May, 1940. Mons was liberated on Sept. 4, 1944, by troops of the British 2nd army during their rapid advance into Belgium. Pop. 26,417.

**MONS, BATTLE OF.** Early encounter of the First Great War, memorable as the first large-scale engagement of the British Expeditionary Force with the German army. It occurred on Aug. 23, 1914, but was not fought to a finish as the British withdrew. The battle clearly demonstrated not only the German superiority in heavy artillery, but also the fine quality of the British troops.

By Aug. 22 the British, 65,000 strong, had reached a front run-

ning from E. of Mons to Condé. The French command planned that they should attack along with the French 5th army on their right and French territorial troops on their left, and if possible envelop the right of Kluck's 1st army. But that evening he learned that at least three German corps were marching against the British in a wide turning movement. The advanced position taken up by Sir J. French, British c.-in-c. (see map), was chosen for attack rather than defence, but in case a defensive battle had to be fought, he proposed to fall back on a line a little farther to the S. During the night there were German penetrations between the British right and French left, and the French 5th army were attacked with such violence and superiority of force that their position was untenable. The French troops who should have prolonged the British left had not arrived.

At daybreak of Aug. 23, German artillery began to shell the exposed loop on the canal N.E. of Mons. German infantry advanced at 8 a.m., and developed a turning movement against the British right. Soon after midday the British withdrew from the canal loop, blowing up the bridges over the canal. The Germans, attacking in force at other points along the canal between Mons and Condé, suffered heavily. So vigorous was the rapid fire of British rifles that the Germans reported they had been opposed by masses of machine-guns. But the British flanks were seriously threatened, and at 5 p.m. Joffre, French c.-in-c., informed Sir J. French that at least four

German corps (160,000 men) were attacking or turning his front and that the French 5th army was in retreat. The British were at once ordered to retire to the second position; but by nightfall the Germans were advancing in overwhelming strength. At dawn on Aug. 24 a general retreat was ordered. At Frameries the British rearguard put up a magnificent defence, obliging the Germans to carry out a costly formal attack.

The extrication of the two British corps from an enveloping attack by four German corps (with a fifth in reserve) was a remarkable feat, especially as the Germans were far better supplied with motor transport and aircraft. The long and painful British retreat which followed during the next fortnight became generally, though not officially, remembered as the "retreat from Mons." British losses in the battle were 4,000-5,000, German losses approximately double. Mons became a symbol of glorious defeat, and it was noted as appropriate that in 1918, Canadian troops reached and entered Mons on the morning of Nov. 11, only a few hours before the armistice.

**MONSERRAT OR MONTSERRAT.** Mountain and monastery of Spain, in Barcelona prov. They are near



Monserrat, Spain. West side of the mountain monastery

the right bank of the Llobregat, 21 m. N.W. of Barcelona. The mt., a remarkable serrated mass, is the Montsagrat of the Catalans, Monsalvatch of the Middle Ages; its highest point is Turó de San Jerónimo (4,070 ft.). On the saw-like mountain (Lat. *mons serratus*) a monastery was founded in the 9th cent. Its chapel housed an image of the Virgin which had been hidden from the Moors in a cave of the mt., was believed to work miracles, and attracted thousands of pilgrims annually, making the monastery one of the richest in Spain. In the Napoleonic Wars

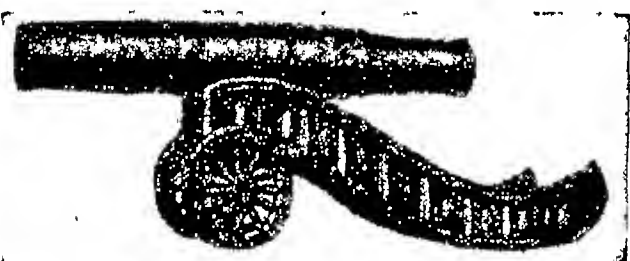
the French sacked the monastery (1811), and it suffered again severely in the Carlist rising of 1827. It includes less ancient buildings dating from 1560

**Monsieur Beaucaire.** Romantic comedy. Based by Mrs. E. G. Sutherland and Booth Tarkington on the latter's novel of the same name, it was produced, Oct. 25, 1902, at the Comedy Theatre, London. Louis d'Orleans, son of the Regent, comes to Bath disguised as a barber, and wins the love of the reigning toast, Lady Mary Carlisle. Lewis Waller played Beaucaire, and Grace Lane Lady Mary. In a film version, 1924, the parts were taken by Rudolph Valentino and Bebe Daniels.

**Monsieur de Pourceaugnac.** Farcical comedy-ballet in three acts by Molière and Lully, produced at Chambord, October 6, 1669, the author acting the title-rôle. Pourceaugnac is a middle-aged rustic, between whom and Julie, the daughter of Oronte, the last named has arranged a marriage. The humour turns on the devices adopted by Julie's lover Eraste to drive Pourceaugnac back to Limoges.

**Monsignore** (Ital., my lord). Title of honour bestowed by the pope on prelates and high officials of the papal household.

**Mons Meg.** Old cannon of great size consisting of bars of hammered iron bound together by iron hoops. It gets its name from the fact that



**Mons Meg.** Cannon made at Mons in 1486. It was supposed to have been used at the siege of Dumbarton, 1489. It is now at Edinburgh Castle

it was made at Mons and it is to be seen in Edinburgh castle. Traditionally supposed to have been constructed in 1486, it was removed to the Tower of London in 1754, but was restored to Edinburgh in 1829.

**Monsoon** (Ital. *monsone*; Arab. *mausim*, season). Winds which blow regularly and persistently during definite seasons of the year. They are prevalent in middle latitudes, especially over S. and E. Asia. The primary cause of these winds is the seasonal difference of temperature between the land and the sea. They are closely connected with the great changes of pressure which take place between winter and summer over the Asiatic

land mass. In the latitude of the Arabian Sea and the Bay of Bengal the normal wind is the cold, dry N.E. trade, and the monsoon is experienced only during the cool season (*i.e.* October–March), when the pressure distribution is dominated by the intense anticyclone. A sudden indraught of air from the S.E. trade crosses the equator and, owing to the change in the earth's rotational deflection, reaches India as the S.W. monsoon. Because of its long passage over the sea the summer monsoon (June–October)



**Monstera deliciosa.** Foliage and stems of the American climber

is heavily laden with moisture, which results in long spells of heavy rainfall; the rains steadily advance north-eastwards and last until the reversal of the wind in October.

Most of India receives from 60 to 90 p.c. of the total annual rainfall during the season of the S.W. monsoon; the fall varies from year to year and the comparative failure of the periodical downpours means famine and plague; the important economic event for the Indian is the annual "bursting" of the heavy clouds which the wind rolls over India from the Arabian Sea.

Similar reversals of the main oceanic wind occur, less markedly, elsewhere, *e.g.* the Gulf of Guinea, E. Africa, N. Australia, the lower Mississippi region of the U.S.A., and eastern Brazil. Frequently the term "monsoon" is applied to denote such summer rainfall without reference to the associated winds. See Wind.

**Mons Star.** Popular name for the 1914 Star, awarded during the First Great War to 350,330 British troops for service in France and Belgium between Aug. 5 and Nov. 22–23, 1914.

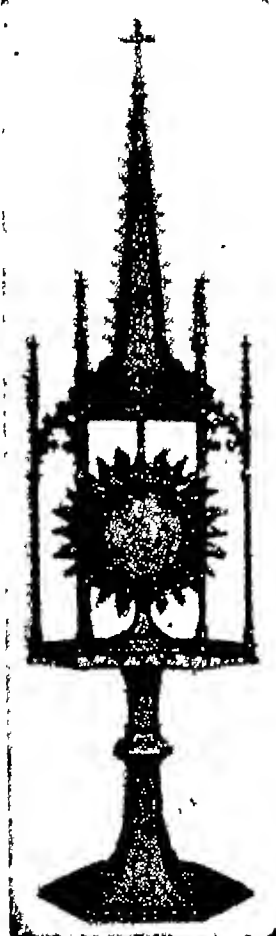
**Monster.** Word which has a number of senses. Commonly a monster is any huge animal, especially an extinct animal, *e.g.* prehistoric monsters as the dino-

saur, ichthyosaurs, mammoths, etc. It is also used in a somewhat similar sense in connexion with such fabulous creatures as mermaids, dragons, and the like. In general, anything abnormally big is called a monster, as a monster potato. The word is also used in the sense of monstrosity, *i.e.* anything ugly, abnormal, or deformed, and includes freaks like Siamese twins, two-headed men, etc. In 1934 considerable excitement was aroused by the so-called Loch Ness monster, which several people claimed to have seen. Observation and an examination of the banks of the loch failed to reveal the presence of anything unusual; and it was thought that seals, porpoises, black fish, or a semi-water-logged tree trunk, seen in a bad light or at a distance, had been mistaken for an aquatic monster.

**Monstera deliciosa.** Perennial climber of the family Araceae, a native of tropical America. The large, leathery, stalked leaves are heart-shaped, but, as they develop, the upper ones have part of their substance absorbed, so that their margins become lobed, and the more central areas have large perforations. The object of this extraordinary development appears to be to allow light to penetrate to the lower-growing parts of the plant. The large inflorescence is, like that of the calla, surrounded by a hood (spathe). The flowers are succeeded by a spike of berries, which are so crowded that they become six-sided at the surface, and within amalgamated into a fleshy, edible body like a banana, with the flavour of pineapple.

**Monstrance** (Lat. *monstrare*, to show). Sacred vessel of the R.C. Church, in which the Host is presented for adoration, carried in procession, and used in Benediction. It consists of a glass or crystal receptacle, called the *lunula* or *lunette*, in which the Host is placed. This is mounted in a gilded frame, frequently representing emanating rays, and is on a stem and foot.

**Montacute.** Country mansion of Somerset, England. Situated



**Monstrance.** Gothic pattern





Montacute. Elizabethan house near Yeovil, Somerset. It was completed at the end of the 16th century for Sir Edward Phelps, whose descendants lived there for over 300 years. It is now the property of the National Trust

about 5 m. W. of Yeovil, it is Elizabethan (1580-1611), but there is some doubt as to who was the architect. Some attribute the design to John of Padua; others to John Thorpe, builder of Longford Castle, near Salisbury. The imposing mansion remains as originally constructed, and is enriched by heraldic glass, fine ceilings, and panelling, with gardens among the finest in the country. Acquired in 1931 by the National Trust and the Society for the Protection of Ancient Buildings, it served as a repository for valuable objects removed from London during the Second Great War. It was reopened to the public in 1946 to house a collection of furniture.

**Montagna**, BARTOLOMEO (c. 1450-1523). Italian painter. Born at Orzinuovi, near Brescia, he probably studied under Alvise Vivarini and was influenced by Mantegna and Giovanni Bellini. His earliest known picture still extant is *The Virgin and Child*, 1487, at Bergamo. His *Madonna and Child*, in the National Gallery, was formerly ascribed to Bellini. Other important paintings are the *San Michele* altar-piece, 1499, *The Presentation in the Temple*, and frescoes at Vicenza. At Verona he painted the frescoes in the chapel of S. Biagio. He died at Vicenza, Oct. 11, 1523.

**Montagnana**. City of Italy, in the prov. of Padua. It stands on the river Frassina, 22 m. direct S.W. of Padua. Surrounded by old walls with medieval towers, it has a late Gothic cathedral with Renaissance choir, and the Palazzo Pisano, the work of Palladio. There is a fine collection of paintings in the cathedral, but others removed here from Florence suffered damage in the Second Great War.

**Montagnards**. Name given to members of the party, often called the Mountain (*q.v.*), formed during the French Revolution.

financial secretary to the Treasury, 1914-16; then succeeded Lloyd George as minister of Munitions. He left office with Asquith, but soon returned as secretary for India, 1917-22, being partly responsible for the Montagu-Chelmsford reforms. On a disagreement with Curzon, he resigned, and the same year lost his seat in parliament. He died Nov. 15, 1924.

**Montagu**, ELIZABETH (1720-1800). English writer. Daughter of Matthew Robinson, she was born at York, Oct. 2, 1720. In 1742 she married Edward Montagu, a wealthy son of the earl of Sandwich, and from about 1750 her salons, first in Hill Street, later at



Elizabeth Montagu, English writer

Montagu House, Portman Square, were centres of social and intellectual life in London. Among those who frequented them were Johnson, Burke, Garrick, and Reynolds. An occasional writer, she made a spirited reply to Voltaire in her *Essay on the Writings and Genius of Shakespeare*, 1769. Her May-day dinners to London chimney-sweeps were celebrated. She died at Montagu House, Aug. 25, 1800. See *Bluestocking*. Consult her *Letters*, new ed., E. J. Climençon, 1906.

**Montagu**, LADY MARY WORTLEY (1689-1762). English letter writer. A daughter of the duke of Kingston, she was born at Thoresby, Notts, and her father gave her a comprehensive education. In 1712 she married Edward Wortley Montagu (d. 1761), and on his appointment as ambassador at Constantinople in 1716 accompanied him there, already recognized as one of the most beautiful and the most accomplished women of her

**Montagu**, EDWIN SAMUEL (1879-1924). British politician. A son of the 1st Lord Swaythling, Jewish banker, he was educated at the City of London school and Trinity College, Cambridge. He secured a Liberal seat in Cambridgeshire in 1906. He was under secretary for India, 1910-14;

time, and a great linguist. On the return of the Montagus to England they were persuaded by Pope to settle at Twickenham, but the friendship between Lady Mary and the poet gradually cooled and ultimately ended in a quarrel in which Pope behaved disgracefully. During 1739-61 ill-health compelled Lady Mary to live in Italy. She died in England, Aug. 21, 1762. Her gift for satirical verse was shown in her *Town Eclogues*, 1716, but it is as a letter writer that she excels. Her *Letters*, written during travels in Europe, Asia, and Africa, were first published in 1777; they reveal an unprejudiced mind with a wide if eccentric range of interests. She introduced to England the practice of inoculation against smallpox. Consult *Lady M. W. M. and Her Times*, G. Paston, 1907; *Life*, R. Halsband, 1956.

**Montague**. Anglicised form of the name of one of the rival families of Verona (Montecchi), whose quarrels form the story on which Shakespeare based his *Romeo and Juliet* (*q.v.*). In the play it is represented by Montague, head of the house, Lady Montague, their son Romeo, and their nephew Benvolio.

**Montague**, CHARLES EDWARD (1867-1928). English writer. He was born Jan. 1, 1867, and went to the City of London school and Balliol College, Oxford. In 1890 he joined the *Manchester Guardian* and for 35 years helped C. P. Scott, whose daughter he married, to give literary distinction to that newspaper. A novel about journalism, *A Hind Lot Loose*, 1910, was followed at once by a critical work on the theatre, *Dramatic Values*. Well over age, Montague served in France in the First Great War, joining the army as a private, and later becoming a press officer attached to H.Q. Intelligence. Disenchantment, 1922, revealing the rare beauty of his style, was also one of the first books to reveal something of the inner truth about the war. Two further novels—*Rough Justice*, 1926, and *Right Off the Map*, 1927—showed his fine mind still perturbed by the disillusionments of war and war-making. Other books were *Fiery Particles* (short stories), 1923, and *The Right Place* (essays), 1924. He died May 28, 1928.



**Montagu House.** A London building. The original Montagu House was built in 1731 for John, 2nd duke of Montagu, on a site in Whitehall gardens which was the extreme S. portion of the old palace of Westminster. In 1859 the old house was demolished and replaced by the present building in French Renaissance style, designed by William Burn, and completed in 1862. To prevent infiltration of river water, the building was constructed on a concrete raft made from the materials of the old house. This was the town residence of the dukes of Buccleuch from 1862 until 1917, when it was occupied by the ministry of Labour. In the Second Great War it was Combined Operations headquarters from May, 1942. In June, 1946, it was taken over by the ministry of Food. Another Montagu House, built for Ralph, 3rd baron, and later the 1st duke, in 1675, occupied the site of the British Museum (*q.v.*). Consult Private Palaces of London, E. B. Chancellor, 1908.

**Montagu Square.** London square. Between Upper George Street and Montagu Place, W., on the Portman estate, it was named after Elizabeth Montagu (*q.v.*). Built 1800-13, on ground once called Ward's Field, the site of Apple Village, its residents have included the mother of the 1st Baron Lytton, Anthony Trollope, and Sir Frederick Pollock.

**Montaigne, MICHEL D'EYQUEM, SIEUR DE** (1533-92). French essayist. He was born Feb. 28, 1533, at the Château de Montaigne, near Bordeaux, in Périgord, a property bought by his great-grandfather, Raymond Eyquem. Montaigne thought the Eyquems intermarried with English residents in Guienne in the time of the Plantagenets. His great-grandfather and grandfather were merchants and exporters of wine, woad, and dried fish; hence the gibe of Joseph Scaliger that Montaigne was the son of a herring-monger. The essayist's father, Pierre d'Eyquem, followed Francis I to Italy and returned to Bordeaux when 33 to marry, take up the duties of alderman and mayor, carry on business as a wine-seller, rebuild the château, and help to found the college of Guienne. Pierre married Antoinette de Lopes, a lady of Jewish blood. Michel was their third son, and one of his brothers and two of his sisters were Protestants.

In accord with his father's views on education, Michel was put out to nurse with a peasant woman,

taught Latin by tutors who knew no French, and early encouraged to read Virgil, Ovid, Terence, and Plautus. He was sent to the college of Guienne, where George Buchanan was one of his teachers, and studied law, probably at Toulouse. He became a magistrate and attended the court of Francis II. His friendship, 1557-63, with Étienne de la Boétie, a young republican thinker, with whom he thought to seek a new home on the other side of the Atlantic, had a lasting effect on his character.



*Montaigne*  
From a contemporary portrait

La Boétie left Montaigne his library, and appointed him his literary executor. Shortly after his marriage to Françoise de la Chassaigne, by whom he had five children, four of whom died in infancy, only a daughter surviving, Montaigne succeeded to the family estate, was made a knight of the order of S. Michael, and, giving up his magistracy, designed to live in retirement, for which purpose he built the famous tower containing his study. But he served as gentleman of the chamber to Henry III and Henry of Navarre, and had some experience of a military life.

A sufferer from stone, he sought recovery by a visit to the baths of Lucca, and in 1580-81 travelled to Italy by way of Switzerland and Germany, chiefly on horseback. In March, 1581, he was made a Roman citizen. Recalled from travel by his election as mayor of Bordeaux, he was re-elected and retained office until 1585. During a visit to Paris in 1588 he met Mlle. Marie le Jars de Gournay, a lady of noble family and some learning, who became his literary executrix.

During his later years he formed a friendship with Anthony Bacon, brother of Francis, and Pierre Charron. He died of quinsy, Sept. 13, 1592, receiving the last offices of the Church. His remains, buried near the château, and removed a few months later to the conventual church of S. Antoine, were, in March, 1886, reinterred in the new university buildings at Bordeaux.

Montaigne's first literary work was a translation, for his father, of the *Theologia Naturalis* of Raimond Sebond, 1568; it served as the text of one of his essays, the first two books of which appeared in 1580; a second edition came out in 1582, a third in 1587, and a fourth, with book 3, in 1588. Of two copies of the 1588 issue, annotated by Montaigne, one provided the material for that brought out by Marie de Gournay in 1595. Montaigne's *Journal de Voyage*, written in part by a secretary and in part by himself, was discovered in MS. at the Château de Montaigne in 1769-70 and, edited by M. de Querlon, was first printed in 1774. He had gone to Paris in 1570 to superintend the printing of the works of La Boétie.

Montaigne lived in an age distracted by religious strife and political upheaval. He, for the most part, maintained the position of onlooker; in religion a formal adherent of the Church, at heart religious without superstition, tolerant without impiety. In civil strife he sought also to avoid extremes. His standpoint was one of provisional doubt; his attitude to all knowledge was *Que sais-je?* (What know I?). To him the quest of truth was more engaging than its possession; the greatest virtue was sincerity. Cicero, Plutarch, Seneca, Diogenes Laërtius, Horace, Plato, Virgil, and Lucretius are the authors most frequently quoted by him. The first of essayists in point of time, a prince of egoists who veils his personality and is apt to hide his serious thought in his self-portraiture, he was a founder of modern criticism, and has exerted much influence on his successors. As a writer he displays wit and a happy humour even when, as in his travel journal, writing in physical pain. In his private life he was a devoted son, and as husband and father was more devoted than his philosophy would seem at first sight to allow.

W. F. Aitken

*Bibliography.* *Essais*, ed. E. Courbet and C. Royer, 4 vols., 1872-1900; English trans. John Florio, 1603, ed. H. Morley, 1885, and T. Seacombe, 1908-9; and Charles Cotton, 1685, ed. W. Hazlitt, 1842.



1845, 1865, and W. C. Hazlitt, 1849, 1902. *Consult also* Representative Men, R. W. Emerson, 1850; M. de M., M. E. Lowndes, 1898; Journal of M.'s Travels, trans. by W. G. Waters, 1903; M. de M., E. Dowden, 1905; M. and Shakespeare, J. M. Robertson, 1909; M. in France, D. M. Frame, 1941; The Complete Works of M., trans. D. M. Frame, 1958.

**Montalembert**, CHARLES FORBES DE TRYON, COMTE DE (1810-70). French politician and man of letters. Born in London, son of an émigré of noble family, he returned to France on the Restoration of 1815, and became known as the founder, with Lamennais (*q.v.*), of the journal *L'Avenir*, 1830, and a champion of the cause of religious liberty. He eventually broke with his colleague and submitted to papal condemnation of his work. He sat in the Chamber, 1848-57 and died in Paris, March 13, 1870. His books are *Vie de S. Elisabeth de Hongrie*, 1836 (Eng. trans. 1904); *Des Intérêts Catholiques au XIXe Siècle*, 1852; *Les Moines d'Occident depuis S. Benoît jusqu'à S. Bernard*, Eng. trans. 1896.

**Montalembert**, MARC RENÉ, MARQUIS DE (1714-1800). French authority on fortifications. Born



Marquis de Montalembert, French writer

at Angoulême, July 16, 1714, he entered the army in 1732. French commissioner with the Swedish army in the Seven Years' War, he fortified Anklam and Stralsund. He was elected a member of the French academy of sciences, and in 1776-86 published *La Fortification Perpendiculaire*. On his theory was founded the system of polygonal defence, first adopted by Prussia. Montalembert died March 29, 1800.

**Montana**. State of the U.S.A. It is bordered E. by the Dakotas, S. by Wyoming, W. by Idaho, N. by Canada. Its W. portion is traversed by the Rocky Mts., whence the surface descends E. to a rolling plain, interspersed with valleys; alt. ranges from 2,000 ft. in the E. to 5,000 ft. Headwaters of the Missouri and Columbia rivers rise in Montana, and the Yellowstone, Milk, and other Missouri affluents help to drain the state. Irrigation has been highly developed, and great reservoirs constructed along the Missouri and Madison.

With its large-scale farming the "treasure state" grows quantities of fruit, while wheat, oats, flaxseed, barley, rye, corn, and potatoes are among the crops. Chief mineral products are gold, silver, copper, zinc, coal, and petroleum. Rich in timber, Montana cultivates white pine, larch, spruce, and cedar. Unsurpassed for mountain scenery is the Glacier National Park, and the state contains seven Indian reservations.

First settled in 1809, Montana was admitted to the Union in 1889; it is divided into 56 counties, and sends two senators and two representatives to congress. The chief cities are Butte, Great Falls, Billings, Missoula, Helena (the capital), and Anaconda. Centres of education include the state university at Missoula, state college at Bozeman, and school of mines at Butte. There are 5,096 m. of steam rlys. and 95 airports. The state lost 15 p.c. of its working pop. during 1937-43, when miners emigrated to aircraft factories on the Pacific coast; farmers were victims of topsoil erosion, concentration of small farms, and backwardness in rural electrification. Cheap electric power was projected in 1948 by the Missouri Valley Authority. Area, 147,138 sq. m. Pop. 559,456. *Consult* Montana, J. K. Howard, 1943.

**Montanism**. Christian heresy which arose in Phrygia in the 2nd century under the teaching of Montanus. He claimed to be specially inspired by the Holy Spirit, and, together with two women, to be endowed with power to make known special revelations to the Church. His main teachings were that mortal sin may be pardoned by God, but cannot be forgiven by the Church; that second marriages are unlawful for Christians; that all Christians should lead ascetic lives; that no Christian should avoid or flee from persecution. Montanus became more or less identified by his more ignorant followers with the Holy Spirit Himself, and his later followers baptized converts in the name of the Father, the Son, and Montanus. The heresy was condemned by the council of Constantinople in 381.

**Montargis**. Town of France, in the dept of Loiret. It stands on the river Loing, here met by the Vernisson, 47 m. by rly. E. of Orléans. It is a rly junction, and as the meeting-place of the three canals of the Loing, Orléans, and Briare, is an important trade centre. Pop. (1954) 15,117.

**Montauban**. Town of France, capital of Tarn-et-Garonne dept. It stands on the right bank of the Tarn, at its confluence with the Tescou, about 30 m. N. by W. of Toulouse, and is a rly. junction on the Paris-Toulouse line. Its foundation dates from 1144, when it was granted a charter by a count of Toulouse. Seat of a bishop, it was repeatedly raided by the Albigensians in the 13th century, and belonged to the English during 1360-1414. It has a long Protestant tradition, but after a Huguenot rebellion its fortifications were demolished by Richelieu. Notable buildings are the hôtel-de-ville with its library and museum; the cathedral (containing the Vow of Louis XIII, painted by Ingres, a native); and the church of S. Jacques. There is a 14th century bridge. Industries include cloth weaving, flour milling, and the making of furniture. Pop. (1954) 38,321.

**Montbéliard**. Town of France, in the dept. of Doubs, 11 m. S.S.W. of Belfort, at the meeting of the Allaine and the Lisaine. The Rhône-Rhine canal runs through the town. Clock-and-watch-making and cotton-spinning are carried on, and tools and machinery are made. Pop. (1954) 17,023.

**Mont Blanc** (Fr., white mountain). Loftiest peak of the Alps, on the Franco-Italian frontier, in Haute-Savoie and Piedmont. The summit, which is in France, reaches an alt. of 15,781 ft. The main mass runs N.E. between the Little and Great St. Bernard Mts., and the principal peaks are the Dôme du Goûter, 14,210 ft.; Aiguille du Midi, 12,600 ft.; Grandes Jorasses, 13,797 ft.; Aiguille Verte, 13,540 ft.; Aiguille du Dru, 12,320 ft.; and Argentière, 12,820 ft. It is composed mainly of granitic rock, and glaciers stretch down it. The snowline is about 8,500 ft. above sea level.

Mont Blanc was first ascended on Aug. 8, 1786, by Michel (Gabriel) Paccard (1757-1827) and his guide Jacques Balmat (1762-1834) (*consult* The First Ascent of Mont Blanc, T. G. Brown and G. de Beer, 1957). It is now easily accessible from Chamonix, and ascents are made nearly every day during the summer season. The principal passes are the Col de la Brenva, 14,216 ft.; Col du Géant, 11,060 ft.; and Col d'Argentière, 11,537 ft. Work on a road tunnel under Mont Blanc, 7½ m. long, between the Chamonix and upper Aosta valleys, begun in 1946, was continuing in 1958.

**Montcalm de St. Véran**, LOUIS JOSEPH, MARQUIS DE (1712-59). French soldier. Born near Nîmes.



*Montcalm*

Feb. 29, 1712, he joined the army young, and after seeing much service in Italy and Germany was appointed in 1756 to command the French forces in Canada. In 1757 he took Fort William Henry from the British, and in 1758 successfully defended Fort Ticonderoga against a superior British army. Then the tide turned. The French lost Louisburg and Fort Duquesne, and Montcalm retired to Quebec and prepared to defend it against the British under Wolfe, who led an army of 5,000 men up to the Plains of Abraham. On Sept. 13, 1759, the French joined battle and were defeated. Wolfe was killed and Montcalm mortally wounded.

**Montceau-les-Mines**. Town of France, in the dept. of Saône-et-Loire. It lies in the busy industrial valley of the Bourbince, 14½ m. S. of Le Creusot. Near by are granite quarries and extensive coalmines. Pop. (1954) 28,308.

**Mont Cenis Tunnel**. Railway tunnel in the Alps between Savoy, France, and Piedmont, Italy. Eight m. long, the tunnel is not under the Mt. Cenis pass, but under the Col de Fréjus, 17 m. to the W. Begun 1857 on the Italian side, 1863 on the French, and finished in 1870 at a cost of £3,000,000, it was opened in 1871.

**Mont Cervin**. The French name for the Matterhorn (*q.v.*).

**Montclair**. Town of New Jersey, U.S.A., in Essex co., on the Morris canal, 5 m. N.N.W. of Newark. Served by the Erie and the Lackawanna rlys., it is a residential district of New York and a summer resort. It makes paper and hosiery. At one time part of Newark and later of Bloomfield, Montclair was incorporated in 1868. Pop. (1950) 43,927.

**Mont de Piété**. French national pawnbroking establishment. Founded in Paris, 1777, by royal ordinance, the original mont de piété started with a monopoly and made large profits until its privileges were abolished at the Revolution. Reopened in 1797 as a private concern, it had its monopoly renewed by Napoleon I. The mont de piété differs from the English pawnshop in that it is a

state undertaking which retains traces of its Italian origin, part of the profits going to the support of the poor. In Italy monti di pietà were established to lend money to the poor in the middle of the 15th century, and thence spread over most of the continent of Europe.

**Montdidier**. Town of France. In the dept. of Somme, it stands on a hill near the river Don, 23 m. N.W. of Compiègne. It was almost completely destroyed during the First Great War (*see* Somme, Battles of the). An important rly. junction, it has tanneries, distilleries, printing works, and candle factories. It existed in the time of the Frankish kings, and in the Middle Ages had its own counts. A fortified place, it was captured by the English in 1523. In 1814 it was occupied by the Cossacks, and in 1870 by the Prussians. In German occupation from June, 1940, it was liberated by the British 2nd army in Aug., 1944. Pop. (1954) 4,557.

**Mont-Dore**, LE. Town of France, in the dept. of Puy-de-Dôme. At an alt. of over 3,400 ft. among the Monts Dore, on the river Dordogne, 48 m. S.W. of Clermont-Ferrand, it is famed for twelve mineral springs which in summer attract sufferers from pulmonary affections, rheumatism, etc. It is also a winter sports centre. There are numerous hotels, a small casino, and a funicular rly. ascending to the neighbouring Salon du Capucin, 4,085 ft.

**Mont d'Or Tunnel**. Railway tunnel 4 m. long on the Paris-Milan route. It shortens the journey between Frasné and Pontarlier by piercing Mont d'Or in the Jura range. Begun in 1910, it was opened in 1915.

**Montebello**. Village of Italy. in the prov. of Pavia, 5 m. E. of Voghera. It is famed for two battles, June 9, 1800, and May 20, 1859, in which the Austrians were defeated by the French and the French and Sardinians respectively. Pop. (1951) 2,026.

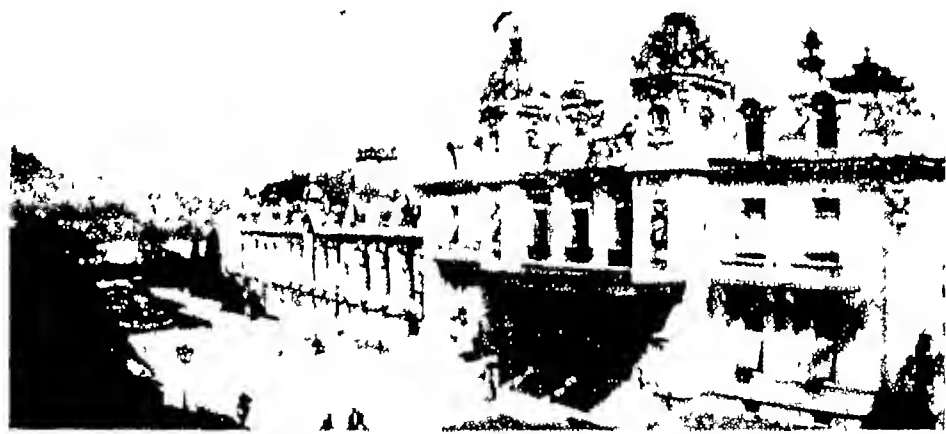
**Monte Bello Islands**. Group of small islands, 50 m. off the N.W. coast of W. Australia, used as a British atomic explosion testing site from 1952. In long. 116° E. and lat. 20° S., they comprise three main islands and hundreds of islets, with a total land and sea area of about 75 sq. m. Hermite (6 m.

long and 2 m. wide) is rocky, with limestone and sandstone formations; Trimouille (3 m. long and less than 1 m. wide) is mainly sandstone cliffs and sand dunes; North-West (1½ m. long and ½ m. wide) consists chiefly of sand dunes. With very little vegetation and no surface fresh water, the islands were formerly visited by occasional fishermen and pearl fishers.

Named by Nicolas Baudin on his voyage of 1801-03, the Monte Bellos are probably identical with the Trial Rocks, on which the English ship Tryal was wrecked May 1, 1622, with the loss of 128 men.

**Montebello Vicentino**. Town of Italy, in Vicenza prov. Near by the French twice defeated the Austrians in 1796. Pop. (1951) 5,098.

**Monte Carlo**. Town of the principality of Monaco. It lies on the N. shore of the Bay of Monaco, adjoining the town of Monaco, 150 m. E.N.E. of Marseilles. It has an excellent climate, and is noted for the gaming rooms in its large casino, which, built in 1878, and adorned with beautiful statuary and paintings, contains also theatre, reading-room, etc. Roulette and trente-et-quarante are the chief games played. Besides numerous hotels, the town has a large palais des beaux-arts. Pop. (est.) 10,700.



Monte Carlo, Monaco. The Casino, containing the famous gaming rooms

**Monte Cassino**. Monastery near Cassino, Italy. Situated on a hill 1,700 ft. high, about 45 m. N.W. of Naples, it was founded by S. Benedict in 529 on the site of a temple of Apollo, and was the first monastery of the order of Benedictines. Devastated by the Lombards in 589, it was rebuilt in 720, and again in 954 after destruction by the Saracens in 884. The Normans wrecked it in 1030, and an earthquake severely damaged it in 1349. Further building took place during 1637-1727. The imposing buildings, with their arcaded courts and cloister and the great abbey, were totally destroyed during the Second Great War (*see* Cassino). Its golden days were in the 11th century



under Abbot Desiderius, later Pope Victor III. From 1886 a national monument, it was the centre of Western monastic organizations and an important educational establishment. The church was rich in marbles, mosaics, sculptures, paintings, and frescoes, and had beautifully carved choir stalls. More than 10,000 volumes, many rare MSS., including the 12th-century work by Alberic which is said to have inspired Dante's *Divina Commedia*, a collection of papal bulls, and other treasures, were moved from the library to safety during the fighting of 1944. A replica of the abbey was completed in 1956.

**Montecatini Terme.** Health resort of Italy, in the prov. of Pistoia, 18 m. W. of Pistoia. The warm mineral springs, in the Nievole Valley, have been in use since the 14th century for abdominal complaints, scrofula, etc. Pop. (1951) 14,739.

Another Montecatini, in the prov. of Pisa, 24 m. E.S.E. of Leghorn, is noted for its warm saline springs. Near by are copper mines, worked since the 15th century. Pop. (1951) 5,354.

**Monte Cristo.** Small island of the Tuscan Archipelago, N.W. Italy. It lies 26 m. S. of Elba, has an area of 6 sq. m. and an alt. of 2,120 ft. It contains many springs and the ruins of a monastery, destroyed by Corsairs in the 16th century. In ancient times the island was called Oglasa.

**Monte Cristo,** THE COUNT OF. Romance by Alexandre Dumas the elder (assisted by A. Maquet), 1845. The hero is a Marseilles sailor, Edmond Dantès, who poses in various rôles during a succession of wonderful adventures of suffering and revenge. The story is perhaps the best of the many works of the great master of French romance.

**Monte Croce.** Pass in the Dolomite Alps, in Italy. It is a fine carriage road leading from Primiero in Tirol to Feltre in Belluno. Its alt. is 1,830 ft. It was the scene of fighting in the First Great War between the Austrians and Italians in 1915.

**Montecuculi** OR MONTECUCCOLI, RAIMONDO, COUNT OF (1609-80). Austrian soldier. He was born Feb. 21, 1609, at Montecuculi, Italy, of an old noble family. About 1625 he entered the Austrian army and served almost continuously throughout the Thirty Years' War. He was present at the battles between the Imperialists and the Swedes, including Lützen, where he was wounded, and save for a

period during which he was a prisoner, he was in the field until the year of 1648, being then a general. In 1657-60 he had a command against the Swedes, but his reputation rests upon his campaigns against the Turks and the French, especially on his great victory over the Turks at St. Gotthard in 1664. During 1672-75 he commanded the Austrians against the French; he retired in 1675, and was made a prince and duke of Melfi. He died Oct. 16, 1680.

**Monte della Disgrazia** (Ital., mount of misfortune). Mountain mass of Italy, in the prov. of Sondrio. It has an alt. of 12,065 ft., and lies N.W. of Sondrio and W. of the Val Malenco.

**Montefiascone** (Ital., large bottle mountain). City of Italy, in the prov. of Viterbo. It stands on a hill at an alt. of 2,010 ft. S.E. of Lake Bolsena, 9 m. N.W. of Viterbo. The unfinished cathedral dates from 1519, the church of S. Flaviano from 1032. The city is noted for its muscatel wine. Pop. (1951) 11,333.

**Montefiore,** SIR MOSES HAIM (1784-1885). Jewish philanthropist. The eldest son of a merchant, Joseph Elias Montefiore, he was born at Leghorn, Oct. 24, 1784, but while still very young he was brought to London, where his family settled. He became a stockbroker, made a fortune, and retired from business. In 1837 he was sheriff of London, and was knighted; in 1846 he was made a baronet. A centenarian, and a strict Jew to the end, he died July 28, 1885. Montefiore's fame rests upon the work he did for the Jews throughout the world. He visited Palestine in their interests, also Turkey, Russia, and other countries, and his labours and charity relieved many of them from persecution and distress.

**Montefrío.** Town of Spain, in the prov. of Granada. It stands on the Bilano river 25 m. N.W. of Granada. It was a frontier fortress of the Moors, whose castle still stands. Alcohol and soap are manufactured. Pop. (1950) 13,698.

**Monte Grappa.** Italian mountain. It is the highest point in the range between the Brenta and the Piave. During the First Great War it was the scene of heavy fighting between Austria and Italy follow-

ing the battle of Caporetto (*q.v.*). See also Piave, Battles of the.

**Monteleone.** Name for many years of a town of Italy, in the prov. of Catanzaro, built on the site of the Roman Vibo Valentia, to which name it reverted under Mussolini. It stands on a hill, alt. 1,575 ft., overlooking the Gulf of Santa Eufemia, about 70 m. N. of Reggio. It has a castle built by Frederick II. Traces of ancient Vibo Valentia and of an older Greek town remain. Monteleone was shattered by an earthquake in Sept., 1905. Pop. (1951) 23,032.

**Montélimar.** Town of France, in the dept. of Drôme. It stands on a hill on the left bank of the Rhône, 93 m. S. of Lyons, and has silk and flour-mills, and local trade in agricultural produce and wine. There are remains of a 12th century keep. Capital of Valdaigne in the Middle Ages, it was united with the Dauphiné to the French crown. Pop. (1954) 16,639.

**Montem.** Name given to a custom formerly observed at Eton College. Every third year on Whit-Tuesday all the boys, led by the captain of the school, marched to an eminence called Salt Hill, whence the phrase *ad montem* (lat. to the hill), and collected money—hence called salt—from the spectators of the ceremony. The sum collected sometimes exceeded £1,000, and was given to the captain of the school as a contribution towards the cost of his maintenance at the university. How the custom originated is not known. It was in existence as early as 1561 and was observed until 1844.

**Montemayor,** JORGE DE (c. 1520-1561). Spanish novelist and poet. Of Portuguese descent, he was born at Montemór o Velho, near Coimbra, whence he derived his name, the Spanish form of which is Montemayor. He is known as the author of *Diana*, the first Spanish pastoral novel, which achieved 17 editions in the 16th century, and provided material for an episode in *The Two Gentlemen of Verona*. It was translated into French and English and was much parodied and imitated. Montemayor died Feb. 26, 1561.

**Montenegro** (Serb. Crna Gora, black mountain). Federal republic (until 1946 a province) of Yugoslavia. It forms part of the Karst limestone heights, and is a barren and mountainous region lying N.W. of Albania and bounded on the S.W. by the Adriatic, dropping steeply down to the sea and to the plains of



Sir Moses Montefiore,  
Jewish  
philanthropist

Serbia. Area 5,340 sq. m. Pop. (1953) 419,873. Maize, tobacco, and wine are produced in the valleys and cattle are reared on the uplands. The capital is Tito grad (the former Podgorica or Podgoritza). pop. (1953) 16,333.

After the Serbian disaster at Kossovo in 1389, the Montenegrins established themselves in their mountain fastnesses under a Serbian dynasty. Danilo Petrovitch proclaimed himself *vladika* or prince bishop in 1697, and strengthened his position by an alliance with Russia. Montenegro maintained her independence despite perpetual conflict with Turkey, during which Cetinje was three times sacked. The treaty of Berlin, signed in 1878, formally recognized the country as a sovereign principality, at the same time granting it a coastline of 28 m. and a section of the plain surrounding Scutari. A constitution was adopted in 1905, and the first national assembly, met the next year. In 1910, on the jubilee of his accession, Nicholas I assumed the title of king.

Montenegro joined the Balkan League and fought beside Serbia in the Balkan wars, receiving in consequence accessions of territory which included nearly half of the Sanjak of Novi Pazar. When Austria declared war on Serbia, July 28, 1914, Montenegro at once threw in her lot with the Serbians, and a force of 40,000 invaded Bosnia in the initial stages of the war. With the Serbian armies finally driven out of Serbia, Austria undertook the conquest of Montenegro. The Montenegrins offered small resistance: a Bulgarian force took Jakova, Dec. 3, 1915, and the Austrians entered Cetinje, Jan. 13, 1916. Negotiations took place, Montenegro's object being to gain time for her forces to fall back to Podgoritza and Scutari, and thence into Albania; meanwhile the king and the royal family, with the government, escaped into Italy. By the end of Jan., 1916, the conquest was complete.

At the end of Oct., 1918, in view of the general situation, the Austrians withdrew from Montenegro without offering serious resistance. After the armistice, King Nicholas being an absentee in France and the country occupied by Serbian troops, a national assembly was elected and met at Podgoritza, Nov. 24, 1918. Within two days the king was deposed, and the country voted to join in the new kingdom of Yugoslavia. See Yugoslavia.

**Montenotte.** Village of Italy, in the prov. of Genoa. It stands among the Ligurian Alps, 8 m. N.W. of Savona. It gives its name to the battle fought April 12, 1796, when Napoleon gained his first victory over the Austrians. The battle was not decisive, and the whole of the French army was not engaged; but the Austrians, seeing their line of retreat threatened, fell back on Dego, which was stormed two days later. See Napoleonic Campaigns.

**Montepulciano.** City of Italy, in the prov. of Siena. It stands on a hill, alt. 2,000 ft., 28 m. (44 m. by rly.) S.E. of Siena. A walled and picturesque city, it has a Renaissance cathedral (slightly damaged by shell-fire in the Second Great War), several fine churches, the Palazzo Comunale, and many other palaces. It is noted for its wine. Pop. (1951) 17,275.

**Montereau-faut-Yonne.** Town of France, in Seine-et-Marne dept., at the meeting of the Yonne with the Seine, 13 m. E. of Fontainebleau. A rly. junction on the main Paris-Sens line, it makes porcelain, pottery, bricks, zinc-white, and cement and has tanneries. Pop. (1954) 10,119. The church dates from the 13th-15th centuries. Montereau was the site of an 8th century monastery of S. Martin (Monasterium), and in the 14th century belonged to the king of Navarre. Here John the Fearless, duke of Burgundy, was assassinated in 1419. Near by was fought the battle of Montereau, Feb. 18, 1814, when Napoleon defeated the Württembergers and Austrians.

**Monterey.** City and seaside resort of California, U.S.A. It stands on Monterey Bay, 125 m. S. of San Francisco, and is served by the Southern Pacific rly. The industries include canning and fishing, and from a good harbour large quantities of oil are shipped. Owing to its beautiful situation and mild climate, it is visited by pleasure-seekers. In appearance it is still largely Mexican, though Chinese, Italians, and Portuguese in distinctive dress are seen.

The town owes its origin to a mission founded by the Franciscans in 1770, although the site had been visited and the place named by a Spanish sailor nearly two centuries before. It was then in the Mexican prov. of California, being for some years the capital. On July 7, 1846, it was taken by the U.S.A., and in 1849 the convention that drew up the constitution of California met here. In 1853 it was made a city. As "the old Pacific

capital," Monterey is described by Stevenson in *Across the Plains*, and John Steinbeck has brought it into his novels. Pop. (1950) 16,205.

**Monterey** OR MONTERREY. The fourth city of Mexico. The capital of the state of Nuevo Leon, 1,625 ft. above sea level, it is 165 m. W. of Matamoros, and is served by rlys., also connected by highway with Mexico City. Situated in a range of the Sierra Madre, amid orchards and gardens, it is the seat of a bishopric. There are foundries, steel works, breweries, saw and flour mills, large smelters, and ice factories. Agriculture and silver mining occupy many. Formerly called Léon, Monterey was founded in 1560, and in 1599 became a city under its present name. In 1909 it was much damaged by flood, and more than 1,000 people lost their lives. Pop. (1950) 333,422.

**Monterey Bay.** Indentation of the coast of California, U.S.A. About 24 m. broad at the entrance, it forms a deep and commodious anchorage, and has two lighthouses. On the N. shore is Santa Cruz, and on the S. shore are Monterey and Pacific Grove.

**Monterey Cypress** (*Cupressus macrocarpa*). Large evergreen tree of the family Pinaceae, a native of



Monterey Cypress. Leaves and fruit of the Californian evergreen

California. It attains a height of over 50 ft., growing rapidly, and has close set branches and minute overlapping, scale-like, dark green leaves.

**Monte Rosa.** Mountain mass of the Pennine Alps (*q.v.*) on the Italo-Swiss border. It lies between the canton of Valais and Piedmont, 50 m. E. of Mont Blanc. Alt. 15,217 ft. Dufourspitze, the highest summit, is in Switzerland, and was first ascended in 1855 by G. and C. Smyth, Hudson, and their companions. On the N.W. is the Gorner glacier, and on the S. is the large Monte Rosa glacier. An observatory was established here in 1904 at 15,000 ft. See Alps.



**Monte San Giuliano.** Name for many years of a town and mountain of Sicily, in the prov. of Trapani. The ancient Eryx (*q.v.*), it was renamed Erice in Mussolini's time. The town stands on the top of the steep hill, alt. 2,465 ft., overlooking the seaport of Trapani. It has a cathedral dating from the 15th century and restored in 1865.

**Monte Sant' Angelo.** Town of Italy, in the prov. of Foggia. It stands on the S. slope of Monte Gargano (*q.v.*), alt. 2,766 ft., 10 m. by road N.E. of Manfredonia. It has a picturesque 15th-century castle, and the church of S. Michele, built in 491 over a grotto, a famous pilgrim resort. Pop. (1951) 25,643.

**Montesarchio.** Town of Italy, in the prov. of Benevento, 10 m. S.W. of Benevento. It has a castle, once used as a state prison. Pop. (1951) 11,084. On a neighbouring hill to the N.W. was the ancient Samnite town of Caudium.

**Montespan, FRANÇOISE ATHE-NAÏS DE ROCHECHOUART, MARQUISE DE (1641-1707).** French courtier, mistress of Louis XIV. Born at Ton- nay - Char- ente, she was the daughter of the duke of Mortemart, and went to court as a maid-in-wait- ing to the queen in 1660.



Marquise de Montespan, French court lady

In 1663 she married Louis, marquis of Montespan, by whom she had two children. A woman of great beauty, she earned notoriety by her indulgence in black magic, and in 1667 became the king's mistress, the children of the union being made legitimate by the king in 1673, and a separation from her husband pronounced in 1674. After 1675, the liaison weakened, though the marquise, displaced now by Mme. de Maintenon, remained at court until 1691, when she left Versailles for a religious life. She died at Bourbon- l'Archambault, May 27, 1707. Her *Memoirs* appeared in 1829, Eng. trans. in 1895.

**Montesquieu, CHARLES LOUIS DE SECONDAT, BARON DE (1689-1755).** A French writer. Born in Gascony, Jan. 18, 1689, he was trained for the law, and succeeded his uncle, whose wealth and title of Montesquieu he inherited, as holder of a high legal office in the parlement of Bordeaux in 1716. There he remained until 1726, when he resigned and went

to live in Paris, being admitted to the Academy. A visit to England in 1729-30, part of a prolonged tour in Europe, made a deep impression upon him, and he settled down to literary work at his château of La Brède, near Bordeaux, ordering his estates and life on the model of an English landowner. He died Feb. 10, 1755.



Baron de Montesquieu, French writer

Montesquieu early began to write, and continued to do so. Of his writings three stand out as serious contributions to human thought. *Lettres Persanes*, which appeared anonymously in 1721, pretend to be the outspoken comments of two Persians on their visit to Europe, and are a wonderful satire on the manners and customs of the age. *Considérations sur les Causes de la Grandeur et de la Décadence des Romains*, first published in Amsterdam in 1734, show the workings of a powerful and original mind, strengthened by wide reading and by the absence of fettering and conventional theories. The same qualities are revealed in his third and much longer great book, *De l'Esprit des Lois*, first published at Geneva in 1748. An edition of Montesquieu's writings appeared in 7 vols. in Paris, 1875-79, ed. by E. Laboulaye. See *Esprit des Lois*; consult Montesquieu, Sir C. P. Ilbert, 1904.

**Montessori, MARIA (1870-1952).** Italian educationist. She was born near Ancona, Aug. 30, 1870. First woman M.D. of Rome university, she took her medical degree in 1894, and became assistant doctor at a psychiatric clinic for mentally deficient children. Experience there led her to evolve the Montessori method (*v.i.*) of child education. She founded clinics in Barcelona, Laren, the Netherlands, and London. She lectured on her system at English universities, was appointed inspector of schools by the Italian government in 1922, organized a training course in Madras, 1939, and in 1947 directed the Montessori centre in London. She died at Noordwijk, Netherlands, May 6, 1952. She pub. *Peda-*



Maria Montessori, Italian educationist

gogical Anthropology, 1913; *The Advanced Montessori Method*, 2 vols., 1917-28; *The Child in the Church*, 1929; *The Secret of Childhood*, 1936.

**Montessori Method.** System of teaching young children evolved by Dr. Maria Montessori, who achieved remarkable success with mentally deficient children while directing the Scuola Ortofrenica in Rome at the beginning of the 20th century. Like Froebel, she believed that true education lies in self-development, and that the teacher's primary work is to assist it by providing an environment which will encourage physical and mental growth, stimulate activity, and promote self-reliance. The teacher is to direct and not repress the child's activities, through simple physical exercises, open-air work such as gardening and the care of animals, plastic work to develop a sense of touch and form, and training of the senses. Furniture is devised to give the utmost freedom of movement and to help the child to be independent in regard to personal habits. Prizes and punishments are discarded.

In 1907 the method was applied with much success to ordinary children, and schools organized on the Montessori system were established in Rome and Milan and abroad. The system attracted attention in the U.K. and in America, where the foundress lectured extensively. There is a Montessori training college at Cranleigh, Surrey.

**Monteverde, CLAUDIO (1567-1643).** Italian composer. Born at Cremona, he became a boy violinist in the service of the duke of Mantua. His talents attracted notice, and in 1602 he was made master of the chapel there. Music master at S. Mark's, Venice

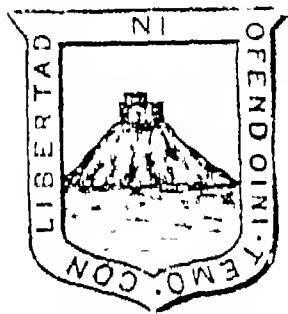


Claudio Monteverde, Italian composer

in 1613, he remained there until his death, Nov. 29, 1643. His operas, especially *Orfeo*, 1607, mark important advances, not only in the setting of operative words, but in the freedom of harmony and the treatment of orchestral instruments. The harmonic style which he invented Monteverde outlined in a book and defended in controversies with rival musicians. He also composed madrigals. Consult *Life and Works*, H. F. Redlich, Eng. trans. 1951.

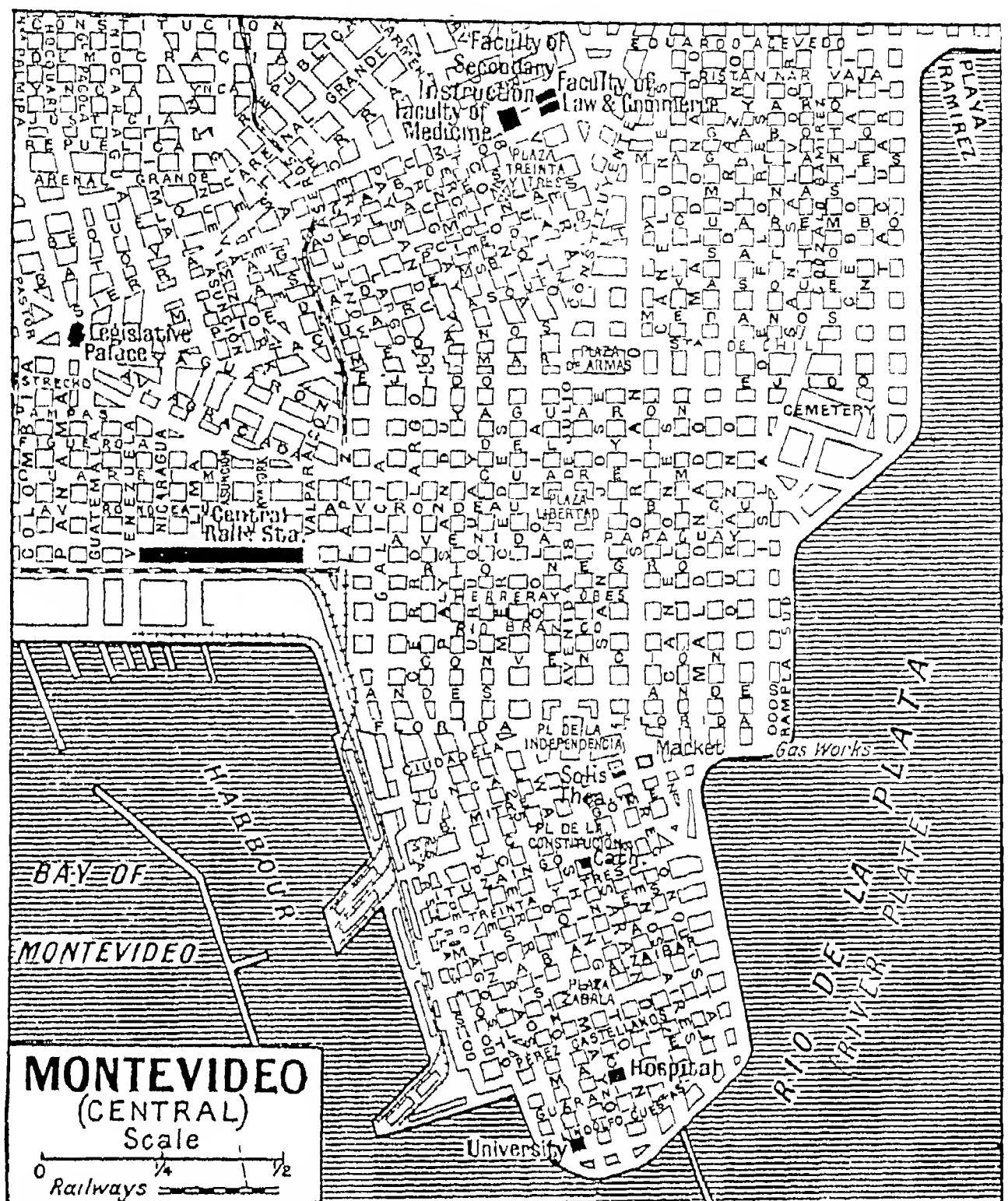
**Montevideo.** Maritime department of Uruguay, at the mouth of the Rio de la Plata. Its surface is hilly, with much pasture land for the grazing of cattle. Exports include beef and other animal products, and wine. Area 256 sq. m. \*Pop. (1953 est.) 800,000.

**Montevideo.** City of Uruguay, capital of the republic and of the dept. of Montevideo. It originally



occupied a small peninsula between the Rio de la Plata and a bay, of which it formed the S. extremity. The city has spread some miles inland in an E. direction, and now lines the bay on its three sides. The Cerro, a low, conical hill, alt. 500 ft., at the head of the bay, is crowned by an old fort, still in use, and a lighthouse.

Montevideo is the principal seaport of the country and the terminus of several rly. lines. Built on a regular plan of *cuadradas*, or squares, the streets extend N., S., E., and W. from the old central point, the Plaza de la Independencia, and the closely built section of the town, standing on a long tongue of land thrust into the bay, continually enjoys sea breezes. This is one of the best built cities in the western hemisphere. The seat of an archbishopric with two suffragan bishops, it has a cathedral, numerous interesting churches, a university, schools, many theatres, and hospitals. The Plaza de la Constitución is the very heart of the city's life, and here are the cathedral, the old

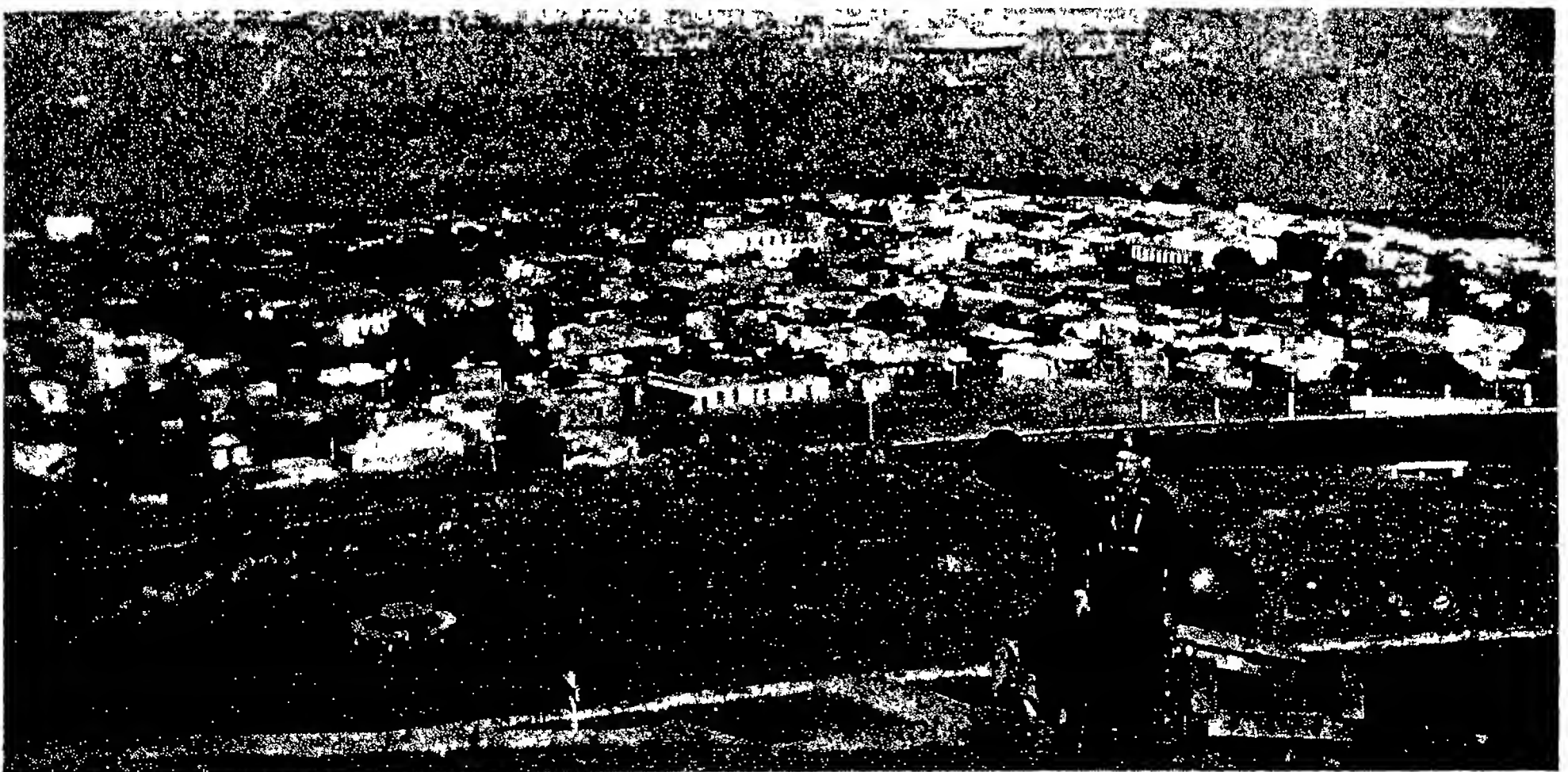


Montevideo, Uruguay. Plan of the central districts of the capital

legislative buildings, clubs, hotels, and business and newspaper offices. Near the city are two racecourses and a bull-ring. A stadium seats 70,000 spectators. An immense harbour is somewhat exposed and obstructed by reefs, rendering it insecure from the heavy storms which frequently

occur. The seaside suburbs of Pocitos and Ramirez are popular resorts for citizens of Buenos Aires.

The climate is healthy, although a high summer temperature prevails. Beef, hides, and other animal products are exported. The city was founded 1726 as an outpost against the Portuguese, and cap-



Montevideo, Uruguay. Entrance to the Rio de la Plata (River Plate) seen from the fort on the Cerro



tured by the British in 1807, but was relinquished when General Whitelocke met with disaster at Buenos Aires. It became free in 1814, and was made capital of the republic in 1828. In Montevideo harbour the German battleship Graf Spee took refuge after the battle of the River Plate, Dec. 13, 1939, and was scuttled just outside the three-mile limit four days later. There is a British colony of about 1,000. Pop. (1953 est.) 837,620. See Plate, Battle of the River: Uruguay.

**Monte Viso.** Peak in Piedmont, Italy. It is the highest point of the Cottian Alps. It stands near the sources of the Po, on the French frontier, and has an alt. of 12,600 ft. The starting point for the ascent is Crissolo.

**Montez, LOLA.** Stage name of the British dancer, Marie Dolores Eliza Rosanna Gilbert (1818-61).



Lola Montez,  
British dancer

Born at Limerick, she lost her father, an army officer, when a child in India. After a clandestine marriage in 1837, which ended in a divorce five years later, she appeared in London as Lola Montez, Spanish dancer. Touring Europe in 1847, she fascinated Ludwig I of Bavaria, who created her countess of Landsfeld, and she began to take part in politics. Returning to England after the revolution of 1848, she married a Guards officer, George Heald, but his relatives taking proceedings against her for bigamy, she induced him to take her to Spain and thence in 1851 to America, where she was again successful on the stage. On Heald's death the same year, she married and left her third husband, and devoted herself to works of charity. She died Jan. 17, 1861, in New York. A film about her was produced in 1957.

**Montezuma I.** Aztec war chief who ruled Mexico during 1440-69. A notable warrior, he extended the Aztec dominion into the eastern lowlands of Vera Cruz, and south into Puebla and Guerrero. He enlarged Tenochtitlán, his capital, and supplied it with water from the springs of Chapultepec. See Aztec.

**Montezuma II.** Aztec war chief who ruled Mexico during 1503-19, a period beset with misfortune and evil omens, ending with the arrival

of Cortés. Spanish sources say that the Indians killed him by stoning, and the Indians allege that the Spaniards strangled him.

**Montferrat.** Former duchy of Italy. It was situated between the republic of Genoa, the river Po, and the Maritime Alps. Ruled by its own margraves, it existed from the dissolution of the empire of Charlemagne about 900 until 1305. The duchy consisted of upper and lower Montferrat, Casale being the capital. The reigning family, who laid claim to the throne of Piedmont, ended with John I, whose nephew, son of the Empress Irene of Constantinople, succeeded to the estates, and was the first of the Montferrat-Palaeologus house. On the extinction of this family in 1533, the duchy passed through the Gonzagas of Mantua to Savoy, and in 1703 became part of Piedmont.

**Montfort, LOUIS-MARIE DE** (1673-1716). French saint. Born at Montfort-la-Cane, Brittany, he entered the Jesuit college at Rennes, and was ordained priest in 1700. He embarked on his career as missionary in the W. provinces of France, preaching in the dioceses of St. Malo, Nantes, Poitiers, and La Rochelle, setting up calvaries, and restoring chapels during journeys on foot. He founded two religious congregations: the Company of Mary, for priests (Montfort Fathers), and the Daughters of Wisdom, for nuns. Canonised July 20, 1947.

**Montfort, SIMON DE** (c. 1208-65). English statesman. A younger son of Simon de Montfort,



Simon de Montfort,  
as represented in a  
window of Chartres  
Cathedral

count of Toulouse and earl of Leicester, who led the crusade against the Albigenses, he inherited the English earldom in 1232, and six years later married a younger sister of Henry III. Although long suspected as a foreigner, he took a leading position among the barons who were opposed to the king. Simon's unswerving love of justice, as he conceived it, his strong religious feeling, and his masterfulness gave him the title of Earl Simon the Righteous. He had at heart no less what he conceived to be the rights of the people than the privileges of the barons; he desired the pre-

dominance of law, but, like Cromwell, he could see no security except in what would have been virtually his own dictatorship. Governor of Gascony from 1248, he was accused of maladministration—with some justice—and retired to France.

In 1258 the contest with the crown came to a head, and in 1259 Montfort and the barons forced Henry to accept the provisions of Oxford, which placed the government of the country in the hands of baronial committees, in each of which Montfort was predominant. In 1261 Henry renounced the provisions. The dispute was referred to the arbitration of Louis IX of France, who gave his award, the Mise of Amiens (*q.v.*), against the barons, Jan. 23, 1264. Montfort took up arms, routed and captured the king at Lewes, May 14, and for a year was in effect dictator. In Jan., 1265, he summoned two representatives (borough members) from certain towns to a council sometimes regarded as the first parliament. Those barons who were jealous of Montfort's power then made common cause with the king. On Aug. 4 Montfort was defeated by the future Edward I, and killed at Evesham. See Evesham, Battle of; Lewes, Battle of. Consult Lives, G. W. Prothero, 1877; M. Creighton, 1895; C. Bémont, Eng. trans., 1930; B. C. Boulter, 1939.

**Mont Genève.** Pass of the Cottian and Graian Alps. Between Italy and France, it connects the valleys of the Dora Riparia and the Durance, on the road from Turin to Briançon. Reaching an alt. of 6,100 ft., it is one of the easiest of the Alpine passes. See Cottian Alps.

**Montgolfier, JOSEPH MICHEL** (1740-1810). A French inventor. He was born at Vidalon-lez-Annonay, and early became interested in aeronautics. With his brother, Jacques Étienne (1745-99), he studied the possibilities of making balloons. Their crude experiments, 1782-83, led to the later invention of the hydrogen balloon. They were honoured by Louis XVI, and Joseph was appointed to various offices by Napoleon. They wrote on aeronautics, including *Les Voyageurs Aériens*, 1784. Joseph died June 26, 1810. See Aeronautics; Balloon.



Montgolfier Brothers,  
French inventors  
From a plaque

**Montgomerie**, ALEXANDER (c. 1545-1611). Scottish poet. Son of Hugh Montgomerie of Hossilhead Castle, Ayrshire, he became attached to the Scottish court under the regent Morton, and travelled on the Continent. His poems are now only literary curiosities, with the exception of *The Cherrie* and *The Slae*, a combination of love poem and moral allegory, written in the 14-line stanza, and abounding in fine passages. They were edited by Cranston for the Scottish Text Society in 1886-87; additions by G. Stevenson, 1910.

**Montgomery**. Mun. bor. and co. town of Montgomeryshire, Wales. It stands near the Severn,



Montgomery arms

7 m. S. of Welshpool and has a rly. station  $1\frac{1}{2}$  m. distant. The name is that of a Norman family, one of whom built a castle here c. 1100. Around this the place grew, becoming a chartered town in 1227. There are ruins of the castle destroyed in the Civil War. Market day, Thurs. Pop. (1951) 904.



Montgomery, Wales. Ruins of the ancient castle

**Montgomery**. City of Alabama, U.S.A.; state capital, and the co. seat of Montgomery co. It stands on the Alabama river, at the head of navigation for large vessels, 178 m. by rly. N.E. of Mobile, and is served by rlys. A commercial and rly. centre, it has steamship communication with Europe, Panama, and New York. Its streets present a curious mixture of old houses, modern bungalows, hotels, rly. shops, and lumber mills intermingled. Montgomery thrives on the export of cotton, perhaps 500,000 bales in a year. Its manufactures include fertilisers, syrups, cigars, machinery, wagons, and cotton goods.

Settled in 1814, renamed New Philadelphia in 1817, it was incorporated in 1837, and superseded

Tuscaloosa as state capital ten years later. From Feb. to May, 1861, it was the seat of the Confederate govt., and it was taken by federal troops on April 12, 1865. Pop. (in 1950) 106,525, a large percentage being negroes.

**Montgomery**. District and town of Pakistan, in Multan division of W. Punjab. The district lies between the Sutlej and Ravi rivers, in the Bari Doab. The middle of the area is high and dry, and cultivation depends largely upon the irrigation canals, rainfall

being but 14 ins. a year. Wheat and pulses are the chief crops. The arid, higher ground is devoted to the herds of the pastoral Jats. The town is close to the Ravi, on the rly. from Multan to Lahore, and the Lower Bari Doab canal brings irrigation water. It dates from 1864, when the village of Sahiwal was made the dist. headquarters and renamed after Robert Montgomery, right-hand man of John Lawrence and lieutenant-governor of the Punjab, 1859-65. Area 4,204 sq. m. Pop., dist., 1,329,103.

## F.-M. LORD MONTGOMERY OF ALAMEIN

Sir Charles Gwynn, Commandant, Staff College, Camberley, 1926-30

*This account of the personal career of the British commander who achieved greatest fame during the Second Great War is supplemented by accounts of his campaigns under Alamein; Eighth Army; Europe, Liberation of Western; North Africa Campaign. See also Alexander, F.-M. Viscount, and Second Great War*

Born in Kennington vicarage, London, on Nov. 17, 1887, Bernard Law Montgomery came of a family long established in Ulster, that recruiting ground for field-m Marshals. His boyhood from two to 14 was spent in Tasmania during the period when his father was bishop of that island. Returning to England, he himself decided on the army as a career, and his education was completed at St. Paul's school and Sandhurst. Nevertheless, son of a bishop and grandson of Dean Farrar, he was brought up in a clerical atmosphere which clearly exercised a strong influence on his character: his abstemiousness, indifference to personal comfort, and powers of self-abnegation were outstanding characteristics of the man.

At school and at Sandhurst, although a notable player of games, he was not a success; but when in 1908 he was gazetted to the Royal Warwickshire regt. he showed exceptional keenness in his profession. With his battalion he went to France in 1914. Desperately wounded at Meteren in the autumn of that year, he was evacuated to England but, making an amazing recovery, was able to return to France. There, employed on the staff, he ended the war as chief staff officer of a div., a temporary lt.-col. with the D.S.O. and six mentions in dispatches to his credit. Demobilisation entailed reversion to permanent rank; but after being an instructor at Camberley staff college, he was given command of his battalion in 1931, serving with it in Egypt and Palestine. In Egypt, although at times in collision with authority, he was recognized

as a remarkable trainer of troops. In Palestine, then a responsibility of the Air ministry, he was senior officer of the army contingent and became impressed with the necessity of closer relations between the two services. On completion of his regimental command he became a senior instructor at Quetta staff college and later commanded a brigade in England. Selected 1938 to command an *ad hoc* div. for the suppression of the Arab rising in Palestine, he was invalided home



Montgomery

after a short time. On his recovery he was given command of the 3rd div. on Salisbury Plain. That div. he took to France when war broke out. With it he played a prominent part in the retreat and Dunkirk evacuation. In England he became, 1940, a corps commander in charge of an important section of the S. coast and was actively concerned in the reorganization and training of the army.



Such was Montgomery's background when in Aug., 1942, he was unexpectedly ordered to Egypt to take command of the 8th army there. In spite of his somewhat difficult characteristics the War office had recognized his merits; but he had not as yet attracted public attention. That he had given special thought as to how in modern warfare a high commander could assert personal influence on his troops was his own secret.

On his arrival in Egypt he had no time to lose in applying his own theories to the problem before him. A new attempt by Rommel to reach Alexandria was imminent, and the 8th army, still disorganized and depressed by disastrous experiences, was in a poor state to meet his attack. Montgomery was fortunate in having in Alexander,

Rommel, compelled to withdraw to his original position, in his turn prepared to meet attack. Supported by Alexander, in spite of pressure from above, Montgomery refused to strike prematurely; but when he had completed his reorganization and had gathered strength for a sustained effort, his promised offensive came and the battle of Alamein, beginning Oct. 23, was fought. In it Rommel's reputation for invincibility was shattered and world-wide fame came to the unknown general and to an army that had previously been dogged by misfortune.

The unconventional methods Montgomery used to impress his personality on his troops and his somewhat flamboyant utterances excited in some quarters derision and hostility; but his army and the general public were convinced that a commander of exceptional quality had arrived. Montgomery's long and sustained pursuit of Rommel through Libya and Tripoli is described under North Africa Campaign; it showed a new standard of co-operation between ground and air forces, and gave proof of organizing and team-building capacity in its commander in addition to tactical skill. Clearly he had an

landing in France. Again his task was to be the executive conduct of a strategical plan prepared by others, although his advice helped materially to change the tactical plan originally envisaged. Placed initially in sole command of the Allied force to be landed, in addition to supervising preparations he devoted his energies to inspiring the troops with confidence, and workers in war industries with a realization of the importance of their labours; his innumerable personal visits to troops and to factories undoubtedly had immense effect in raising morale.

In due course the landing was successfully accomplished with honours equally shared by the three services. (For an account of the campaign, see *Europe, Liberation of Western*.) Operations followed broadly an agreed plan, but for a time progress seemed to be so slow that even Eisenhower thought a new plan might be necessary. Montgomery's confidence and determination, however, never faltered and, never losing the initiative, he forced his old opponent Rommel to expend his reserves piecemeal. As a result the break-out when it came had swifter and more decisive results even than had been anticipated. As had been arranged, General Eisenhower then took over direct control of the whole Allied force, leaving Montgomery, promoted field-marshal, Sept. 1, 1944, in command of the 21st army group, composed of the British 2nd and Canadian 1st armies, to carry out the tasks assigned to him.

Montgomery had strongly advocated a different policy from that General Eisenhower adopted. Both Eisenhower and Montgomery agreed that a crossing of the Rhine and capture of the Ruhr would make prolongation of German resistance impossible; but there were two alternatives: (a) to concentrate all available transport for the maintenance of a powerful, mainly armoured, thrust north-eastwards which, overcoming any resistance offered by the disorganized enemy, might secure a bridgehead over the Rhine as a gateway to the plains of N. Germany; (b) to pursue the enemy on a broad front with a view to lining up on the whole length of the Rhine before invading the heart of Germany. Course (a) was the more risky, and it would have entailed depriving a large part of the U.S. armies of mobility and offensive power; but it promised swifter results. Course (b) entailed disper-



Field-Marshal Lord (then General Sir Bernard) Montgomery addressing Canadian troops before the invasion of Italy, in 1943  
*British Official*

his chief, a man who not only himself inspired confidence, but was willing to accept responsibility and to give his subordinate a free hand, placing reinforcements of men and material that were arriving freely at his disposal.

Montgomery's immediate grasp of the situation and restoration of the confidence of the 8th army must rank as one of his greatest achievements. Warning his troops that there would be no further retreat and that they must fight where they stood, he promised them victory, first in a defensive battle and then in due course by a resumption of the offensive. The troops responded amazingly to the omnipresence, energy, and confidence of their new leader. In less than a month after his arrival the skilfully planned defensive battle of Alam el Halfa was won and

admirable staff, but he was using it to the best advantage.

Out-maneuvred at El Agheila and at the approaches to Tripoli, Rommel was forced to continue his retreat to the Tunisian border and beyond. In the battle of Tunisia Montgomery, called away to plan the landing in Sicily, took no prominent part; but the 8th army shared in the fighting and its reputation induced Rommel's successor, von Arnim, to make fatally wrong dispositions.

For the strategy of the Sicilian and Italian campaigns Montgomery had no responsibility, but he carried through difficult tactical operations with marked success. (See *Italy: Campaign in, 1943-45*.)

At the end of Dec., 1943, Montgomery was summoned to England to take part in the preparations for the intended Allied

sion of effort, and although by engaging the enemy everywhere it gave him less opportunity of staging a counter-attack, it offered less chance of inflicting rapid and decisive defeat on him. General Eisenhower chose course (b), chiefly because he considered port facilities, especially at Antwerp, essential before the final invasion of Germany could be attempted. Under his plan 21st army group opened the Channel ports and Antwerp, and attempted to secure a bridgehead over the Maas and lower Rhine. With its immensely long line of communication, however, it proved not strong enough to carry through these tasks simultaneously. Whether plan (a) advocated by Montgomery would have succeeded must remain a matter for speculation. But despite their differences of opinion, Eisenhower's confidence in Montgomery was evident, for he placed the 1st and 9th U.S. armies under his command to help stem Rundstedt's counter-offensive in the Ardennes, Dec., 1944-Jan., 1945, the 9th remaining part of the 21st army group until the Ruhr was encircled at the beginning of April. That army group was the first to line up on the Rhine; the meticulously planned and admirably executed crossing of the Rhine followed, March 23-24. Fittingly enough, the commander of 21st army group received the first offer of unconditional surrender by the enemy, and was the first in Germany to accept the surrender of the whole enemy force opposed to him.

#### Unbroken Sequence of Victories

With this astonishing record, Montgomery gained a reputation as a commander in the field second to none. Although often opposed by the best of the enemy's commanders and troops, from the time he set foot in Egypt he had a virtually unbroken series of victories to his credit, gained under widely different conditions. It is true that, except in Libya and Tripoli, he was never in independent command, and was therefore responsible only for executive action and not for major strategic planning. That he showed himself a master of major tactics, versatile and determined both in attack and defence; and that he was a leader endowed with exceptional power of getting the best out of his troops are indisputable. The immediate influence he exercised in restoring the confidence of the 8th army and inspiring it to develop *esprit de*

*corps* to an unprecedented degree was all the more remarkable because the methods he adopted to bring his personal magnetism and qualities into play broke many British conventions and excited much criticism. To an exceptional extent he took his troops into his confidence before battle, and to that no doubt was due the response they gave to the heavy demands he made on them.

It was sometimes said that he showed himself unsuitable for team work. He was certainly an outspoken subordinate; but he was a remarkable team builder.

Montgomery was fortunate in as much as his opportunity came at a time when Allied power had begun to develop, and the enemy, having outrun his strength, had become vulnerable. He was fortunate, too, in having in Alexander and Eisenhower superiors ready to support him and to make allowances for his eccentricities and unconventionality; but there can be few cases in which a comparatively unknown general so completely rose to the occasion, and furthermore maintained a suddenly acquired reputation.

After the final surrender in Germany, Montgomery was c.-in-c. British army of the Rhine, military governor of the British zone of Germany, and British member of the Allied control commission in Berlin, May, 1945-Feb., 1946, when he was appointed C.I.G.S. and returned to Great Britain. In 1946 he received a viscounty, taking the title Viscount Montgomery of Alamein, of Hindhead. As C.I.G.S. 1946-48, he initiated reforms in the army and sought increasing integration of imperial defence. He was chairman of the Western Europe committee of c.-in-c.s 1948-51, deputy supreme Allied commander, Europe, 1951-58. He was deputed to carry the royal standard at the coronation of Elizabeth II. *Consult* his Normandy to the Baltic, 1946; El Alamein to the R. Sangro, 1948; Montgomery, A. Moorehead, 1946.

**Montgomery, GABRIEL, COMTE DE** (c. 1530-74). French soldier. Grandson of a Scottish officer in the French service, he went to Scotland in 1545, with forces sent to Mary of Lorraine by Francis I. On June 30, 1559, in a tournament, he accidentally inflicted a mortal wound on Henry II of France. Taking refuge in England, he became a Protestant, and returned to join the Huguenot armies in 1562. He defended Bourges

and Rouen against royal forces, unsuccessfully attacked Mont St. Michel, 1563, and in 1569 invaded Béarn, capturing Orthez. He escaped from the massacre of S. Bartholomew, 1572, taking refuge in Jersey and again in England. In 1573 his attempt to enter La Rochelle failed, and he was captured at Domfront. Taken to Paris he was executed, May 25, 1574.

**Montgomery, JAMES** (1771-1854). Scottish poet. Born at Irvine, Nov. 4, 1771, the son of a



Moravian missionary, he was apprenticed to a baker, and in 1792 became a clerk in the office of the Sheffield Register. In 1795 he started the Sheffield Iris, which he edited until 1825, twice getting

into trouble for publishing seditious matter. He was a man of exemplary character, reflected in the strong religious tone of his poems, of which *The World Before the Flood*, 1813, and *Greenland*, 1819, are best known. His hymns include *For ever with the Lord*, and *Hail to the Lord's Anointed*. He died at Sheffield, April 30, 1854. His *Poetical Works* were repr. 1881.

**Montgomery, JOHN** (1860-1911). American aeronaut. Born at San Diego, Calif., he studied the flight of seagulls, and in 1883 built a glider with twin wings with which he carried out soaring experiments. In 1890 Mahoney, a well-known balloon parachutist, was taken in one of Montgomery's gliders by a balloon to a height of 4,000 ft., when the glider was released and brought to earth after a controlled flight lasting 23 mins. Montgomery was killed when he crashed in one of his gliders. As he had never attempted to achieve powered flight, his work was overshadowed by that of the Wrights (*q.v.*). A film based on his life, *Gallant Journey*, was produced in 1946.

**Montgomery, ROBERT** (1807-55). British minor poet. Born at Bath, the natural son of a professional clown named Gomery, he became notorious by reason of Macaulay's devastating criticism in the *Edinburgh Review*, April, 1830, of two poems by him, *The Omnipresence of the Deity*, and *Satan*. Later he became a successful preacher in Glasgow and London, and died Dec. 3, 1855.

*Montgomery*

After T. H. Illidge



**Montgomeryshire.** An inland county of N. Wales. It is almost entirely surrounded by mountains,



Montgomeryshire arms

and is itself a hilly region. The Plynlimon range is in the S.W. and elsewhere on the borders are the Berwyn mts. and Breidden and Kerry Hills. The chief rivers are the Severn, which rises here, and its tributaries, the Tanat, Vyrnwy, and Wye, and the Dovey. Herein is the artificial lake Vyrnwy, created during 1890-1905 to supply water for Liverpool. The co. is agricultural, and cattle and sheep are raised.

The boroughs are Llanidloes, Llanfyllin, Montgomery, and Welshpool; the co. offices are at Welshpool. There are some British and many Roman remains in the county which, before it was made into a shire, was part of the district of Powys. The county forms a county constituency. Area 797 sq. m. Pop. (1951) 45,990. *Consult* Montgomeryshire, J. May and S. F. Wells, 1942.

**Month.** Period of time chiefly regulated by the moon's motion round the earth. There are various months according to the different methods of computation. (1) The lunar month, lunation, or synodic month, is the time which elapses between consecutive new or full moons, and its length on the average is 29 days, 12 hours, 44 mins., 2.8 secs. (2) The tropical month is the revolution of the moon with respect to the movable equinox. It is 27 days, 7 hours, 43 mins., 4.62 secs. (3) The anomalistic month is the time in which the moon returns to the same point of her movable elliptic orbit. It is 27 days, 13 hours, 18 mins., 37.4 secs. (4) The sidereal month is the interval between two successive conjunctions of the moon with the same fixed star. It is 27 days, 7 hours, 43 mins., 11.47 secs. (5) The nodical month is the time in which the moon accomplishes a revolution with regard to her movable nodes. It is 27 days, 5 hours, 5 mins., 35.8 secs. (6) The calendar month is the month recognized in the almanacs, consisting of an arbitrary number of days. (7) The solar month, the twelfth part of a solar year, consists of 30 days, 10 hours, 29 mins., 4 secs.

In statutes before Jan. 1, 1851, and deeds, wills, and contracts before Jan. 1, 1926, "month" in

the absence of any contrary indication usually means lunar month; but in statutes and documents after these dates it means calendar month unless the context otherwise requires. In mercantile transactions in the City of London and in all mortgages, "month" even before 1926 meant calendar month.

**Monti, VINCENZO** (1754-1828). An Italian poet. He was born at Fusignano, near Ravenna, Feb. 19,



Vincenzo Monti, Italian poet

1754. His lyrical tragedy, *Aristodemo*, 1786, rendering the grief of a father for having slain his daughter, was followed by a romantic tragedy, *Galeotto Manfredi*, 1788. In 1793 he produced a Dantesque epic, *Basseviliana*, the subject being the murder in Rome of Hugo Basseville, representative of the French republic. This was translated into English by H. Boyd, 1805, and by Lodge, 1845. Monti became Napoleon's historiographer in Italy and his panegyrist, notably in *Mascheroniana*. He translated the *Iliad* into Italian. Died at Milan, Oct. 13, 1828.

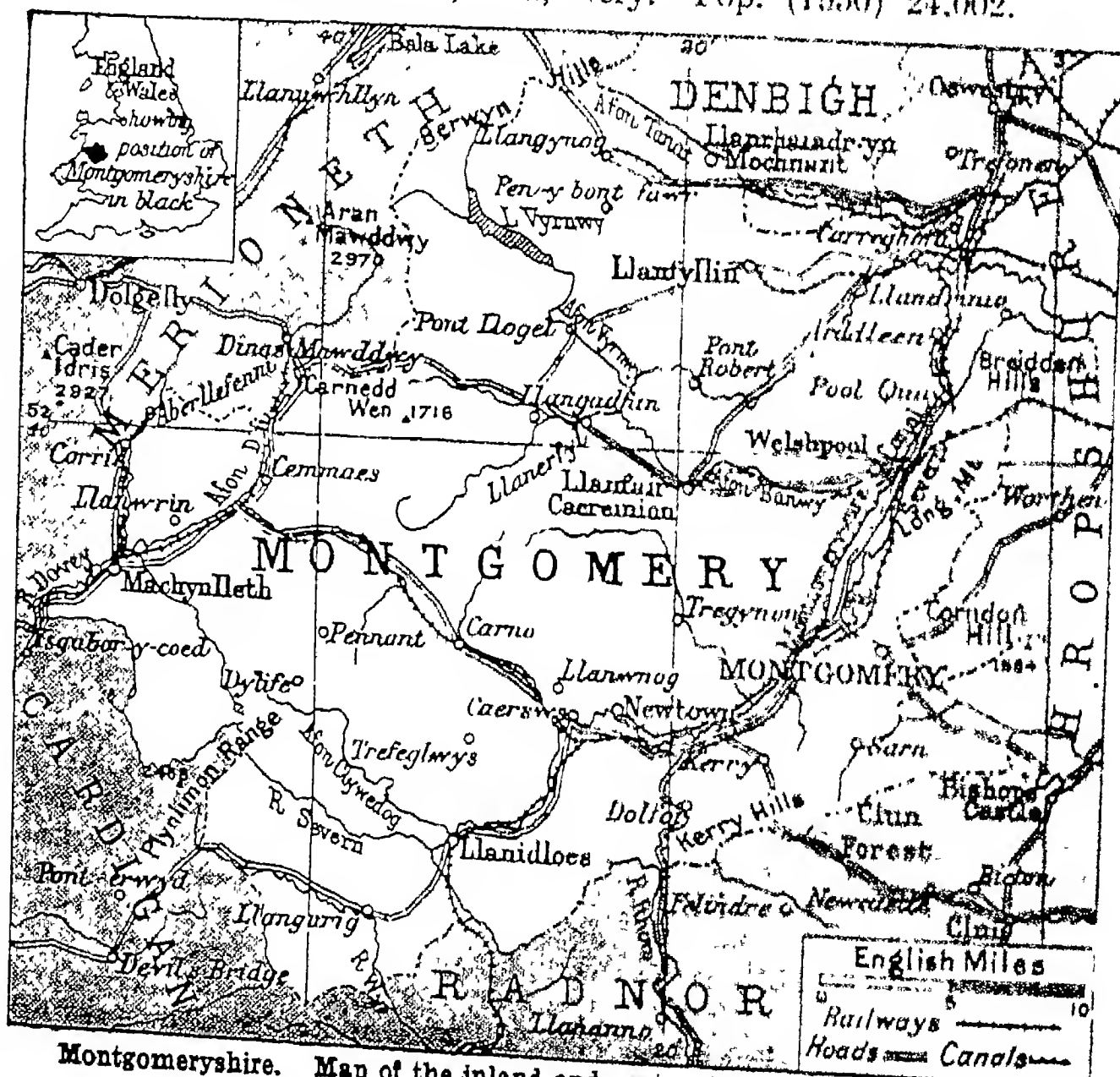
**Montian.** In geology, a division of the Upper Cretaceous system of rocks. See Cretaceous System.

**Monticello.** Home of Thomas Jefferson, 3rd president of the U.S.A., in Albemarle co., Va.,

which he designed. The house and its 640 acres are on a hillside 2 m. from Charlottesville, overlooking the Blue Ridge mts. and the Piedmont plateau. Jefferson began to build Monticello in 1770, and it was his home for 56 years. The style, predominantly Graeco-Roman and Palladian, greatly influenced Virginian domestic architecture. Unusual lighting and ventilating devices, folding doors, and disappearing beds are a feature of the house. Monticello was purchased in 1923 by the Jefferson memorial foundation for 600,000 dollars (then £120,000), and was dedicated as a national shrine on July 4, 1926, the centenary of Jefferson's death there.

**Montignies-sur-Sambre.** A town of Belgium, in the prov. of Hainault. It lies 3 m. E. of Charleroi, on the left bank of the Sambre, in the midst of the thickly populated industrial area of the valley. The town has important coal mines in the vicinity, and various metal-working, engineering, and glass-making industries.

**Montilla.** Town of Spain, in the prov. of Córdoba. It stands on a spur of the Sierra de Montilla, alt. 1,165 ft., 31 m. by rly. S.S.E. of Córdoba. The dist. is noted for its exquisite wines. The birthplace of Gonzalo or Gonsalvo de Córdoba, it contains the ruined castle of his father, Fernandez. Montilla manufactures coarse linen, leather goods, olive oil, and pottery. Pop. (1950) 24,002.



Montgomeryshire. Map of the inland and pastoral county of North Wales

**Montluc** OR MONLUC, BLAISE DE LASSARAN-MASSENCOME, SEIGNEUR DE (1502-77). French soldier. Born in Gascony, he became after his father the seigneur of an estate there. Beginning in the ranks, he saw much service in the French army in Italy. He made a name by his defence of Siena in 1555, and the king was glad of his services when civil war broke out in France. In 1574 he was made a marshal, and he continued in the field until his death. Montluc is known as the author of *Commentaries* which deal with his campaigns between 1521 and 1574. They afford valuable material for the history of that time. Henry IV named the book the Soldier's Bible. There is an ed. in 5 vols., 1864-72.

**Montluçon.** Town of France, in the dept. of Allier. It stands on the Cher, 50 m. S.W. of Moulins, and consists of an upper or old town and a newer one below. In the former are the churches of Notre Dame and S. Pierre, the latter a Romanesque building begun in the 12th century, and the castle. In the newer town are factories making glass, chemicals, iron and steel goods, sewing machines, etc. In the neighbourhood are coalmines. Pop. (1954) 48,743.

**Montmartre.** Arrondissement of Paris, containing the *quartiers* of Grandes-Carrières, Clichancourt,

Commune broke out, Feb., 1871. The district is thickly populated, has many steep and narrow streets, and is noted chiefly for cabarets and night clubs which have grown up since about 1880. The large cemetery of Montmartre dates from 1798, and contains the graves of many distinguished men, including Murger and Gautier. The name is thought to be a corruption of Mont Martyr, given because in Roman times, so it is said, S. Denis and other martyrs were put to death here. There was a temple to Mercury on the hill.

**Montmédy.** Town of France, in the dept. of Meuse, with a citadel on a hill, Mons Medius in Roman France, whence the name of the town which lies on the river Chiers, 31 m. S.E. of Sedan. It is a rly. junction for Belgium. There are tanneries and factories making hats and vinegar; also miscellaneous local trade. Pop. (1954) 2,770. Formerly in the duchy of Luxemburg, Montmédy was taken by Louis XIV in 1657, and, after two days' bombardment, by the Prussians in 1870. The fortress, with works constructed by Vauban, was of great strategical importance at the start of the First Great War, for it dominated the rlys. from Belgian Luxemburg into France. The French evacuated it at the end of Aug., 1914, and it became a centre of German communications throughout the war. The Germans broke through N. of Montmédy in May, 1940, thus outflanking the Maginot line, and the town lay in the German zone of occupation during the Second Great War until liberated in the rapid Allied advance which took place at the end of Aug., 1944.

**Montmorenci, ANNE, DUC DE** (1492-1567). French soldier. He was born at Chantilly, March 15, 1492, and by 1522 had become a marshal, having distinguished himself at Marignano, 1515, and at the defence of Mézières, 1521. In 1525, with Francis I, he was defeated and taken prisoner at Pavia, but on the renewal of the war in 1536 he defeated Charles V at Susa, forced him to raise the siege of Marseilles, and two years later was made constable of France. In 1548 he crushed the insurrectionary movement in the

S.W. of France, and he took part in the war in the Boulonnais, 1549-50, and the disaster at St. Quentin, 1557. He was made a duke in 1551, and was mortally wounded at St. Denis in 1567, fighting the Huguenots, and died in Paris on Nov. 12 of that year.

**Montmorenci, HENRI, DUC DE** (1595-1632). French soldier. A grandson of Anne de Montmorenci, he played a prominent part in the fighting against the Huguenots which began in 1621. For his defeat of the Spaniards in Piedmont in 1630 he was made a marshal. In 1632 he embraced the cause of Gaston d'Orléans, but was defeated at Castelnaudary, and executed at Toulouse, Oct. 30, 1632.

**Montmorency.** River of Quebec, Canada. A tributary of the St. Lawrence, it rises in the province, and flowing almost due south for about 80 m., falls into the larger river near Quebec. It is noted for the falls near the mouth, reached from Quebec, 8 m. away, by an electric rly. They are 265 ft. high, and supply Quebec with electric power. The river played an important part in the storming of Quebec by Wolfe, 1759.

**Mont Orgueil Castle.** Picturesque ruin on the island of Jersey, accessible by rly. from St. Helier. Standing on a rocky pinnacle dominating the village and harbour of Gorey, on the E. of the island, it was begun in the 10th century by the dukes of Normandy, and was given its name by the duke of Clarence, brother of Henry V. It successfully withstood a siege by the French in 1374. William Prynne (*q.v.*), while a prisoner here, 1637-40, wrote the poem *Mount Orgueil, or Divine and Profitable*



Anne, Duc de Montmorenci, French soldier



Montmartre, Paris. Place du Tertre. On the left is the church of S. Peter, and behind that the dome of the church of Sacré Coeur

Routte-d'Or, and Chapelle. It lies to the N. of Paris, within the fortifications, built on a hill rising to the summit crowned by the large basilica of the Sacré Coeur, begun in 1875. The once famous Abbaye des Dames de Montmartre was founded in 1133. It was in Montmartre that the insurrection of the

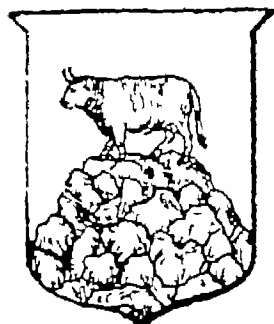


Mont Orgueil Castle, Jersey, with the harbour and village of Gorey, from the St. Helier road



Meditations, raised from the Contemplation of these three Leaves of Nature's Volume: Rocks, Seas, Gardens. The castle was vested in the States by the crown in 1905.

**Montoro** (anc. *Epora*). Town of Spain, in the prov. of Córdoba. It stands on a peninsula caused by

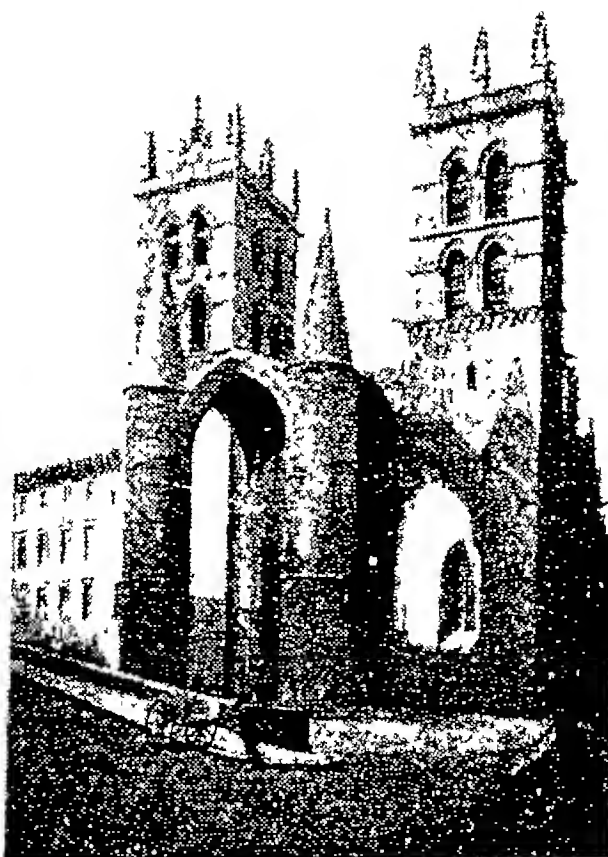


Montoro arms

the winding of the Guadalquivir, here spanned by a fine 16th century bridge, 27 m. by rly. N.N.E. of Córdoba. It produces olive oil, timber, cattle, etc. Once a Moorish fortress, it has many Roman, Gothic, and Moorish remains. There are medicinal springs in the vicinity. Pop. (1950) 15,396.

**Montpelier.** City of Vermont, U.S.A., the capital of the state and the co. seat of Washington co. On the Winooski river 40 m. by rly. E.S.E. of Burlington, it is served by the Montpelier and Wells and the Central Vermont rlys. It has a fine capitol. Most of the citizens belong to the Vermont civil service or work for the life insurance companies which have headquarters here. Extensive granite quarries are in the neighbourhood. The town was subject to extensive flooding, but this was mitigated by dams built during the Roosevelt "New Deal" administrations. Settled in 1787, Montpelier became the capital of the state in 1805, was incorporated in 1855, and chartered as a city in 1894. Pop. (1950) 8,599.

**Montpellier.** Town of France, capital of the dept. of Hérault. It stands on a hill 7½ m. inland from the sea at Palavas, and 31 m. by rly. S.W. of Nîmes, is the junction of several rly. lines, and h.q. of an army corps. Its university, founded 1289, suppressed 1794, reconstituted 1896, is noted for its faculty of medicine; associated with it is the Collège des Écossais, founded by Patrick Geddes (1854-1932). It has distilleries, tanneries, printing works; makes leather, chocolate, candles; trades in corn, wine, silk. The cathedral, a 14th cent. foundation, is chiefly modern, with a remarkable porch. The church of S. Anne is modern. The Musée Fabre contains a large collection of paintings, French and Dutch schools being specially well represented, and houses the town library. The botanical gardens, founded 1593, are the oldest in France. The Peyrou is a promenade originally laid out in



Montpellier, France. Porchway and towers of the cathedral of S. Pierre

the 17th century, with a lofty aqueduct and ornamental basin.

Montpellier dates probably from the 8th century, gained a charter in 1141, and in the 16th century developed an autonomous constitution. A centre of Calvinism, it was taken by Louis XIII in 1622. Before the Revolution it was the capital of Languedoc. French troops took it from the occupying Germans on Aug. 31, 1944. Population (1954) 97,501.

**Montpensier,** ANNE MARIE LOUISE D'ORLÉANS, DUCHESSE DE (1627-93) Born in Paris, May 29,



Duchesse de Montpensier

1627, she was a daughter of Gaston d'Orléans, the brother of Louis XIII. In the Fronde La Grande Mademoiselle sided with the princes, and took a spirited personal part in the capture of Orléans. In Paris she took command at the Bastille, and in the Faubourg St. Antoine fighting, July 2, 1652, fired on the royal troops. After the collapse, she retired to her estates of St. Fargeau until 1657. In 1681 she married Antonin, duke of Lauzun (1632-1723), a union which Louis had refused to allow eleven years before. the marriage proved unhappy. She died in Paris, leaving *Memoirs*, published 1729, which cover the period 1630-88. See *Fronde*.

**Montreal.** Largest city of Canada and chief financial and commercial centre. It stands on the S.E. side of the island of Montreal (*q.v.*) at the junction of

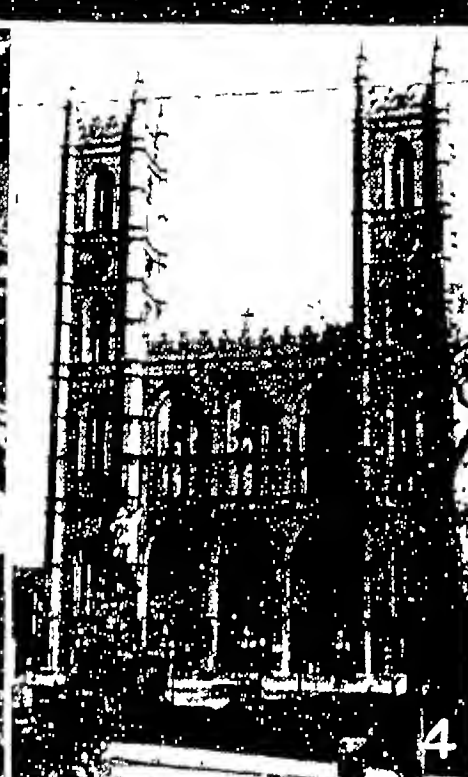
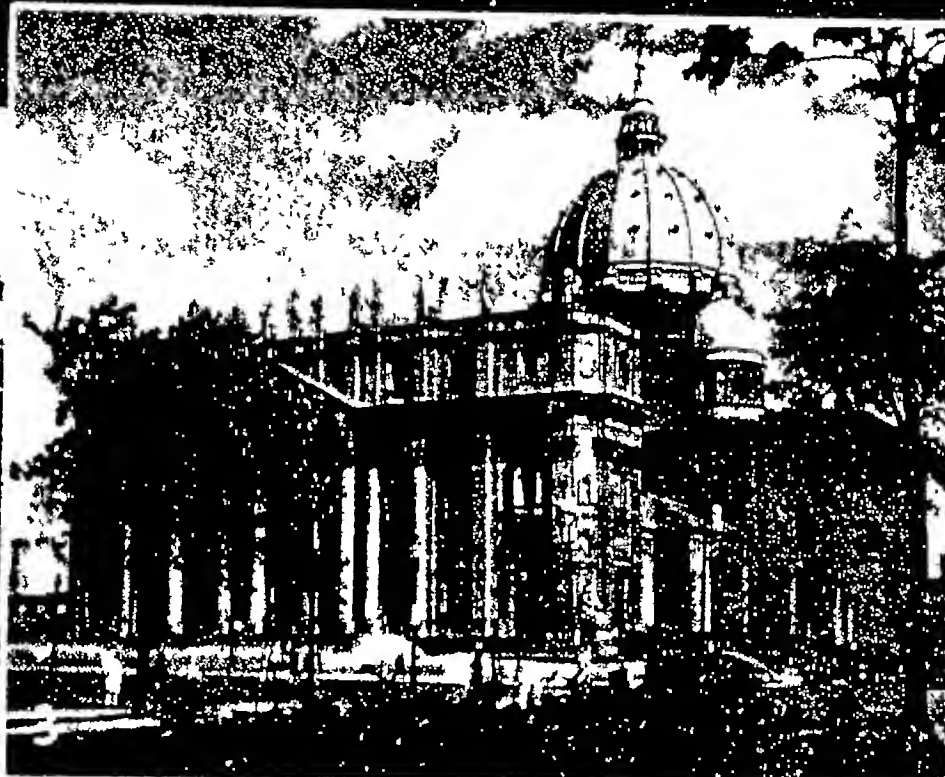
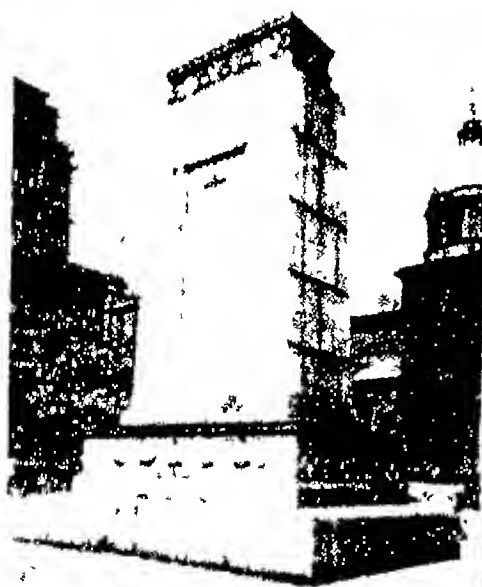
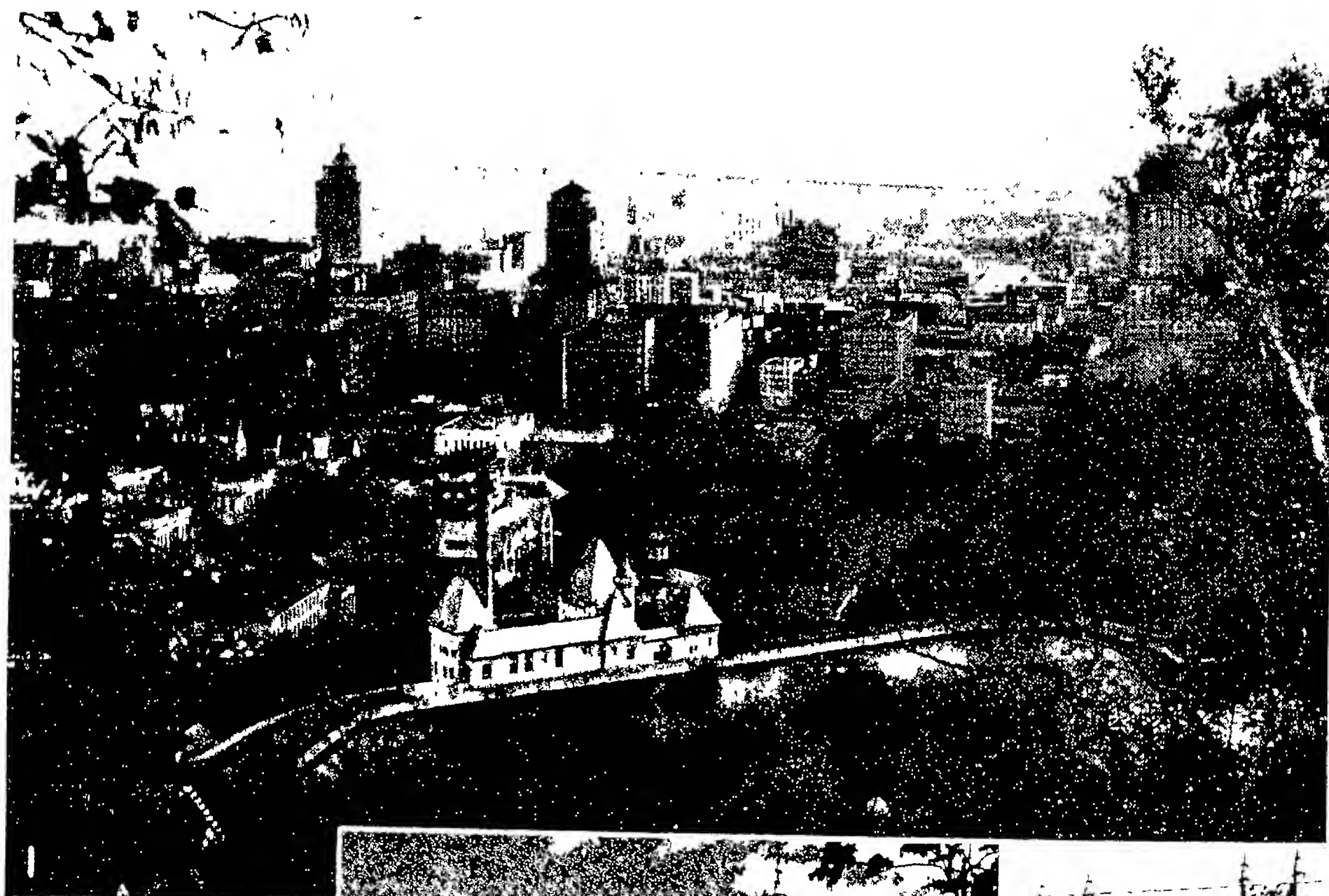
the Ottawa and St. Lawrence rivers, in the county of Montreal and Jesus Is., prov. of Quebec. Largest inland port in the world, it is 980 m. from the Straits of Belle Isle, 420 m. from New York and 2,750 m. from Liverpool. The city had a pop. (1956) of 1,109,439, of whom 542,060 were males. Outside Paris, it is the largest French-speaking city, but it includes a considerable British element.

Originally an Indian village named Hochelaga, first visited by Jacques Cartier, of St. Malo, in 1535, it was founded as the Ville Marie de Montreal by Paul de Chomedy, Sieur de Maisonneuve, in 1642. The early years of its existence were marked by constant struggles against the hostile Iroquois, but by 1672 it had 1,500 settlers and rapidly became the centre of the fur trade, a position it enjoyed for nearly two centuries. Montreal was the last place to be surrendered to the British (Sept., 1760), a year after the capture of Quebec. In 1775-76 the city was occupied by troops of the Continental Congress, but the citizens resisted all persuasion to join in the revolution against British rule.



Montreal city seal

Montreal has always been distinguished for its civic energy, and most of its growth has been due to the initiative of its own citizens. Modern development dates from the opening of the Lachine canal in 1825, which, with the chain of artificial waterways that followed it, opened the way for direct communication across the Great Lakes to the heart of the N. American continent. In 1836 the first Canadian rly. was opened between Laprairie, opposite Montreal, and St. Johns, in the eastern townships. Twelve years later a second railway, from Longueuil to St. Hyacinthe, was built. Both were the enterprises of Montreal merchants. Further developments were the building of the Grand Trunk rly. (1852); the construction of the Victoria bridge spanning the St. Lawrence (1860); and the completion of the transcontinental system of the Canadian Pacific rly., 1886. The most important factor in the growth of the city as a port has been the constant deepening of the ship channel which, begun in 1844, had (1947) a depth of 32½ ft. at low water, and brings ocean-going steamships to its quays. Port



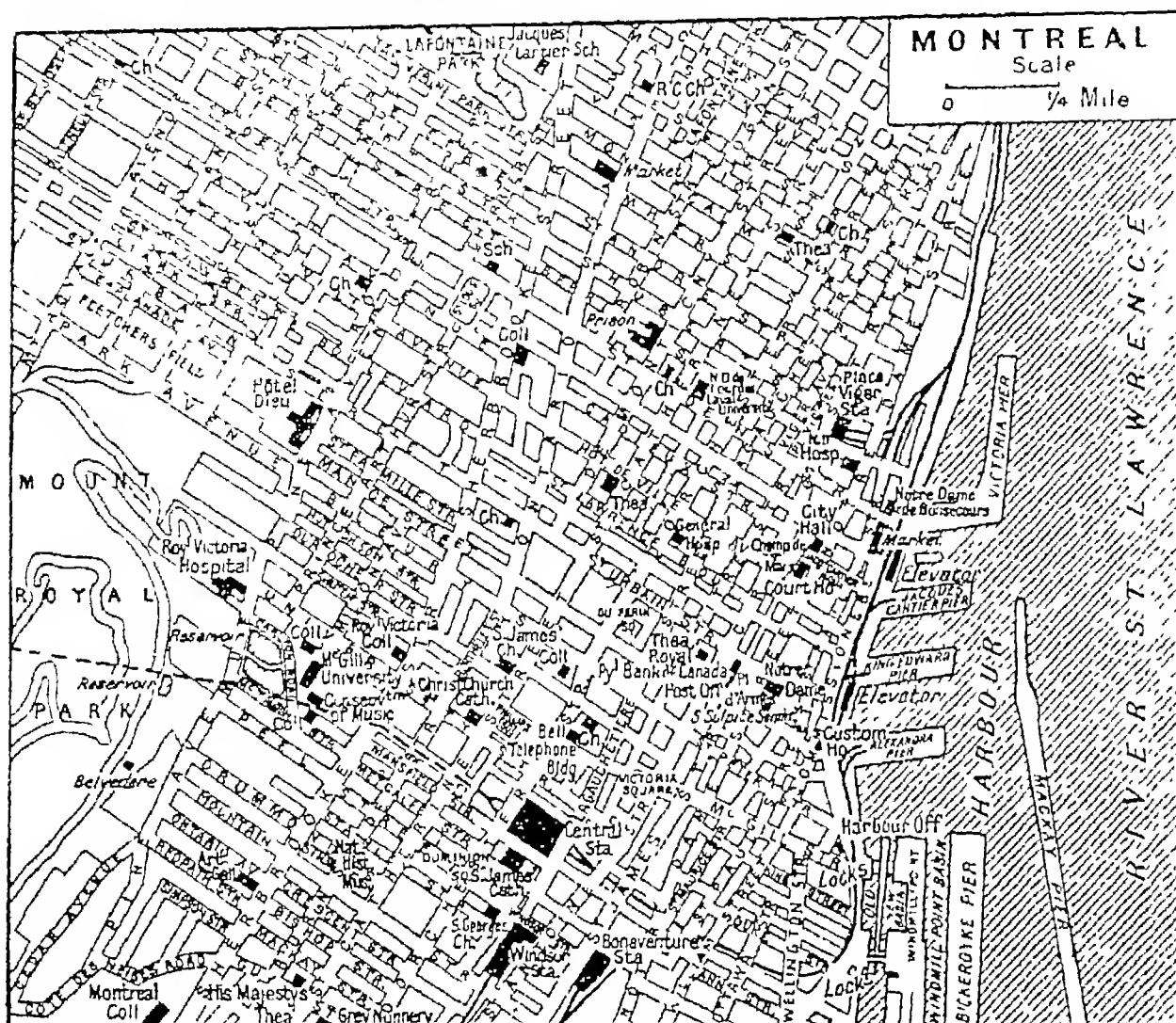
1. General view from Mount Royal, with the St. Lawrence beyond. 2. Montreal Soldiers' Memorial, 1914-1918. 3. S. James's Cathedral, modelled on S. Peter's, Rome, built in 1868; the roof-edge statues are of the twelve apostles. 4. The great church of

Notre Dame, built in 1824. 5. General view of the city with Mount Royal, behind, left. 6. Place D'Armes and statue of Paul de Chomedy, Sieur de Maisonneuve, founder of Montreal, and showing the headquarters of the Bank of Montreal, founded 1817

# **MONTREAL: BUILDINGS AND SCENES IN THE COMMERCIAL CAPITAL OF CANADA**

Nos. 1, 2, 3, 4, 6 National Film Board of Canada, No. 5, E.N.A.





**Montreal.** Plan of the commercial capital of Canada, showing the principal buildings and docks on the St. Lawrence

facilities include 10 m. of deep draught wharf, four grain elevators with a total storage capacity of 15,162,000 bushels, a cold-storage warehouse of 4,628,000 cu. ft. capacity, 19 two-storey and 7 single-storey transit sheds, and a terminal rly. system of some 60 m. of which about 40 m. is electrified.

Montreal rises from the river in a series of terraces to the foot of Mount Royal (753 ft.), the city's most striking feature, and extends roughly for some seven miles along the St. Lawrence, and northwards for the same distance. It has an area of 50 sq. m. Beyond the great wharves of the harbour, with its rows of antiquated buildings, is the wholesale trade district: further along are the skyscrapers of the retail section, hotels, and theatres, while radiating from Mount Royal in all directions are the residential areas. The chief industrial plants are to the E. and W. In all, 12 bridges connect the island of Montreal with the mainland, the longest being Jacques Cartier bridge, 10,300 ft. and Victoria bridge, 6,600 ft.

Montreal is rich in ecclesiastical buildings. A huge cross crowning Mount Royal and illuminated at night, is visible for many miles. Mother-church of the city, Notre-Dame de Bonsecours is Perpendicular Gothic, with twin towers 227 ft. high. S. James's, a modified replica of S. Peter's at Rome, is the seat of the R.C. archdiocese of Montreal. S. Joseph's

Oratory, carved into and rising out of the rock of Mount Royal, is a celebrated shrine. Christ Church cathedral is the seat of the Anglican diocese of Montreal.

The city's numerous statues include those of Maisonneuve in the place d'Armes; MacDonald and Cartier, fathers of confederation, respectively in Dominion Square and at the foot of Mount Royal; Nelson in Jacques Cartier Place; and Queen Victoria in the square of the same name. There is a monument to the poet Burns.

Here are Montreal (formerly Laval) university, centre of French culture, and McGill university, with a medical school. There are 49 hospitals, from the Hotel Dieu, founded in 1647, to the Royal Victoria, built in 1887, and there is an art gallery, as well as a city hall and other public offices. In the old city, the château de Ramezay, once the seat of the French governors, has become a museum of Canadiana. The chief daily papers are: (French) *La Presse*, *Le Canada*, *Le Devoir*, and (English) the *Gazette*, the *Herald*, and the *Star*.

Montreal has an abundant supply of electric power from Shawinigan Falls, Beauharnois, Rivière-des-Prairies, Chambly Cascades, and Cedar Rapids. The principal manufactures are: tobacco, cigars, and cigarettes, rly. rolling stock, clothing, ale and beer, electrical apparatus, boots and shoes, biscuits and confectionery, sheet metal products, castings and forgings, textiles,

cotton yarn, and cloth, paints, primary iron and steel products, and cement. It is also a printing and publishing and a copper refining centre. It is served by C.N.R., C.P.R., Rutland rly., Del. and Hudson, Central Vermont and N.Y.C. rlys.; by Trans-Canada air lines and Canadian Colonial airways; and has two airports, St. Hubert and Dorval. The street rly. system of the city and suburbs has 280 m. of track, and there is also a bus service. The city is governed by a mayor and council, consisting of 90 councillors, of whom six are elected within the body to form the executive committee which administers the city's day-to-day business affairs.

**Montreal.** Island of Quebec prov., Canada, on which stands the city of the same name. It is 32 m. long by some 9 m. wide, and its total area of 200 sq. m. is the most densely populated in all Canada. Twelve bridges connect it with the mainland, of which the two longest are Jacques Cartier (10,300 ft.) and Victoria (6,600).

**Montreal, BANK OF.** Canadian banking company. Founded in 1817, it is the oldest bank in Canada. It has a paid-up capital of \$36,000,000, and acts as financial agent to the government of the Dominion of Canada in London. Its headquarters are in Montreal, and it has well over 500 branches throughout Canada and Newfoundland, and offices in New York, Chicago, and San Francisco. Its London offices are at 47, Threadneedle Street, E.C.2, and 9, Waterloo Place, S.W. 1.

**Montreuil.** Town of France, in the dept. of Pas-de-Calais. It is on the river Canche, 8 m. from its mouth, and 20 m. S.S.E. of Boulogne. Its ancient ramparts still survive. The church of S. Saulve dates from the 12th century. Once on the sea, it was long a noted posting-stage on the Calais-Paris highway. It is referred to in Sterne's *A Sentimental Journey*. In the First Great War the École Militaire here was British G.H.Q., 1916-19. A statue of Earl Haig, unveiled 1931, was destroyed by the Germans during the German occupation of 1940-44; it was replaced by another from the same mould in 1950. Pop. (1954) 3,253.

Another Montreuil, in the dept. of Seine, virtually a suburb of Paris, was formerly famous for its peaches. Pop. (1954) 76,252.

**Montreux.** Series of lakeside villages of Switzerland, in the canton of Vaud. They stand on the

N.E. shore of Lake Geneva, about 50 m. N.E. of Geneva, and extend from Clarens to Veytaux, including also Vernex, Les Planches, Glion, Colonges, and Territet. The central point is the town of Montreux-Vernex, with a rly. station and steamboat pier, quays, villas and gardens,

a college, a kursaal, etc. There are English churches at Territet, Clarens, and Glion. Montreux is a tourist resort. Pop. 20,000.

**Montreux Conference.** Conference opened June 22, 1936, between the representatives of Turkey, Great Britain, France, Russia, Japan, Greece, Bulgaria, and Yugoslavia, for the purpose of revising the Straits convention signed at Lausanne in 1923. Under the new agreement, signed July 20, 1936, Turkey recovered her sovereignty over the Dardanelles with full right to remilitarise the zone. The international commission of the Straits was dissolved. Freedom of commerce was guaranteed in peace and in war, and limitations on the passage of foreign warships into and through the Black Sea were laid down; belligerents were denied the use of the Straits except with the authority of the League of Nations, and in case of war or threatened aggression Turkey had the right to close them to navigation, subject to a two-thirds vote of the League council. In 1946 Turkey refused a Russian demand for a share in the defence of the Dardanelles unless such a revision of the Montreux convention were agreed to by all the signatories.

**Montrose.** Royal burgh and seaport of Angus, Scotland. It stands 31 m. N.E. of Dundee on a peninsula where the South Esk falls into the North Sea, the river here forming an estuary to the S. and Montrose basin to the W. of the town. The buildings include the parish church, town house, academy, infirmary,



Montrose arms



Montreux, Switzerland. View of this town on the eastern shore of the lake of Geneva

etc. There is a harbour with docks and other accommodation. In addition to fishing and shipping, the industries include flax-spinning and the making of linen, rope, etc., also shipbuilding, fruit and vegetable canning, and distilling. Montrose was made a burgh in the 12th century, and was a flourishing seaport in the later Middle Ages. The academy here was the first in Scotland where Greek was taught. The council supplies water, and owns two golf courses. During the First Great War there was an aerodrome here, which later became an R.A.F. maintenance unit. Montrose basin covers about 2 sq. m. In the estuary is the island of Rossie or Inchbrayoch, connected by a bridge with the town proper. Market day, Fri. Pop. (1951) 10,762.

**Montrose, DUKE OF.** Scottish title borne since 1707 by the family of Graham. In 1488 the title was given to David Lindsay, earl of Crawford. It did not pass to his descendants, and, in 1505, William, 3rd Lord Graham, who had married a relative of the late duke, was made earl of Montrose. His grandfather had been made Lord Graham in 1445, and he himself was killed at Flodden. John, the 3rd earl, who succeeded to the title in 1571, was chancellor of Scotland, 1599-1604, and regent of the kingdom for James VI after that king succeeded to the English throne in 1603. He died in 1608. The 5th earl, the soldier, James Graham (v.i.),

was made a marquess 1644, and was the most famous of the family.

James, the 4th marquess, was a leading politician at the time of the revolution of 1688. He supported the accession of George I, helped forward the union of the parliaments, and in 1707 was made a duke. He was a secretary of state and keeper of the great seal of Scotland, 1716-33. In 1853 the earl of Crawford claimed the dukedom, but his suit before the house of lords failed. The duke sits in the lords as Earl Graham, a title dating from 1722. His seats are Buchanan Castle, near Glasgow, and Brodick Castle, Isle of Arran. An eldest son is called marquess of Graham. James Angus (b. 1907) became 7th duke in 1954.

**Montrose, JAMES GRAHAM, 1ST MARQUESS OF (1612-50).** Scottish soldier. He succeeded his father as 5th earl of Montrose, Nov. 14, 1626, and then went to the university of St. Andrews. His mother was Margaret, eldest daughter of the 1st earl of Gowrie. He married in 1629 Magdalen, daughter of the future earl of Southesk. In 1637 he took an active part in drawing up the National Covenant; in 1640 he was with the Presbyterian army invading England; but once Charles I had allowed Scotland to have its own church, Montrose found himself in complete antagonism to Argyll and became in Scotland the foremost champion of the crown. In 1644, when the Scots army entered England in alliance with the English parliament, Montrose obtained a commission as lieutenant-general from the king at Oxford, passed into Scotland in disguise, and on Aug. 30 raised the well-affected clans of the Highlands for the king.

With a force numbering barely 2,000 men, Montrose created mar-

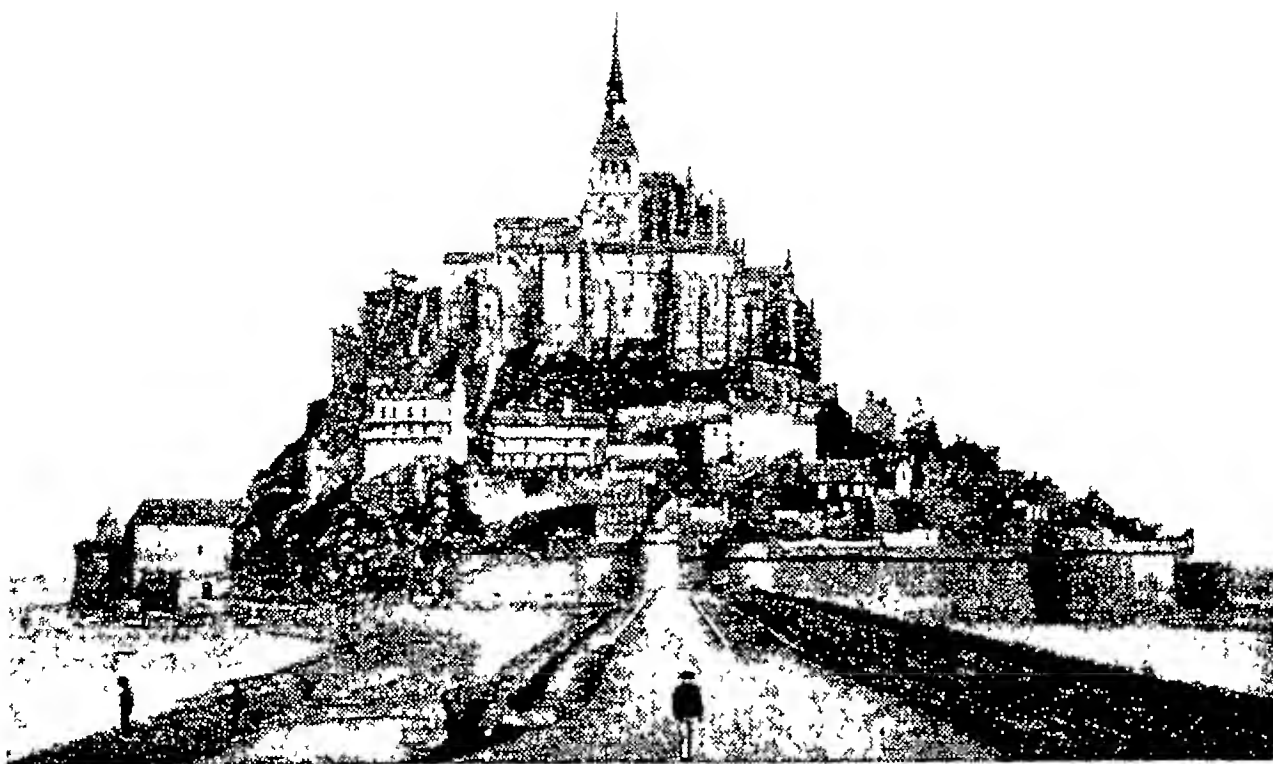


1st Marquess of Montrose, Scottish soldier  
After Dobson



Montrose, Angus. General view of the town, with the harbour and quays





Mont St. Michel, France. The south-east aspect of the rock, crowned by the Benedictine abbey, seen from the causeway

quess, conducted in the Highlands a brilliant series of campaigns, winning victory after victory over forces thrice as numerous as his own: at Tippermuir, Sept. 1; Aberdeen, Sept. 13; Inverlochy, Feb. 2, 1645; Auldearn, May 9; Alford, July 2; Kilsyth, Aug. 15, when for once he had 5,000 men. This victory seemed to place the Lowlands at his mercy, but when he advanced the clansmen melted away, and he had fewer than 1,000 men when he was surprised and his troops were cut to pieces by David Leslie at Philiphaugh, Sept. 13. So ended the "year of victories."

Finding the royalist cause hopelessly lost, Montrose escaped abroad; but in 1649, when the English parliament had beheaded Charles I, he resolved on one more desperate effort on behalf of Charles II. He landed in Caithness, but few men rallied to his standard, his small force was dispersed at Corbisdale, April 27, 1650, and he himself was captured and betrayed by Macleod of Assynt into the hands of the Scots government, by whom he was sentenced to be hanged and dismembered as a traitor. The sentence was carried out in Edinburgh on May 21. Eleven years later the remains of the "great marquess" were buried in S. Giles's, where a monument was erected in 1888. His romantic career, military genius, magnanimity, and the small body of his poetry have endeared Montrose to succeeding generations of Scots.

*Bibliography.* *Memoirs*, 2 vols., M. Napier, 1856; *Memoirs trans. from the Latin of G. Wishart*, A. Murdoch and H. Simpson, 1893; *Lives*, Lady Violet Greville, 1886; J. Buchan, repr. 1947.

**Mont St. Michel.** Village of France, in the dept. of Manche. It

is built on a steep granite rock about 160 ft. high, in the Bay of St. Michel, about  $\frac{1}{2}$  m. from the mainland to which a raised causeway runs. On top of the rock stands the old Benedictine abbey, and the picturesque effect of the rock crowned with the great church and spire, has made it a widely famous landmark.

The abbey, founded by S. Aubert of Avranches in 708, was one of the greatest religious houses of Normandy, a favourite place of pilgrimage, and became a notable centre of learning. Monks from the abbey of S. Maur replaced the Benedictines in 1622, but the buildings became state property at the Revolution. Under Napoleon III several political prisoners were kept here, but in 1863 it again became a religious house. Since 1874 it has been under the care of the Commission des Monuments Historiques. The church, begun in the 11th century, has a 15th century Gothic choir and a tower and spire; the 13th century cloisters are of carved granite, and the large building known as La Merveille is also notable. The bay is noted for dangerous quicksands; much land has been reclaimed on the S. shore near the Mont.

**Montserrat.** One of the Leeward Islands, British W. Indies. It is situated in the Caribbean Sea, 27 m. S.W. of Antigua, and has a length of 12 m. and maximum breadth of 8 m.; area about 32 $\frac{1}{2}$  sq. m. Of volcanic formation, it rises in Mt. Chances to over 3,000 ft. It has thermal springs, and at the Soufrière, the highest point on the island, are steam vents and sulphur and gypsum deposits. Well timbered and watered, it produces and exports cotton, cotton seed, limes, pineapples, oranges, bananas, tomatoes, onions, car-

rots, and other fruits and vegetables. Lime juice and citrate are manufactured. The chief town is Plymouth. First colonised by the English in 1632, Montserrat was occupied by the French for short periods in the 17th and 18th centuries. There are executive and legislative councils. Pop. 14,329.

**Montyon**, ANTOINE JEAN BAPTISTE ROBERT AUGET, BARON DE (1733-1820). French philanthropist. Born in Paris, Dec. 23, 1733, he became a lawyer, and in 1775 was made a councillor of state. Emigrating at the outbreak of the Revolution, he remained abroad, mostly in London, until the Restoration, spending large sums of money in helping other *émigrés*. Returning to Paris in 1814, he reorganized a series of prizes instituted by him before the Revolution. Before his death, Dec. 29, 1820, he bequeathed £400 to each Paris hospital, and similar sums for works to ameliorate the conditions of the working classes.

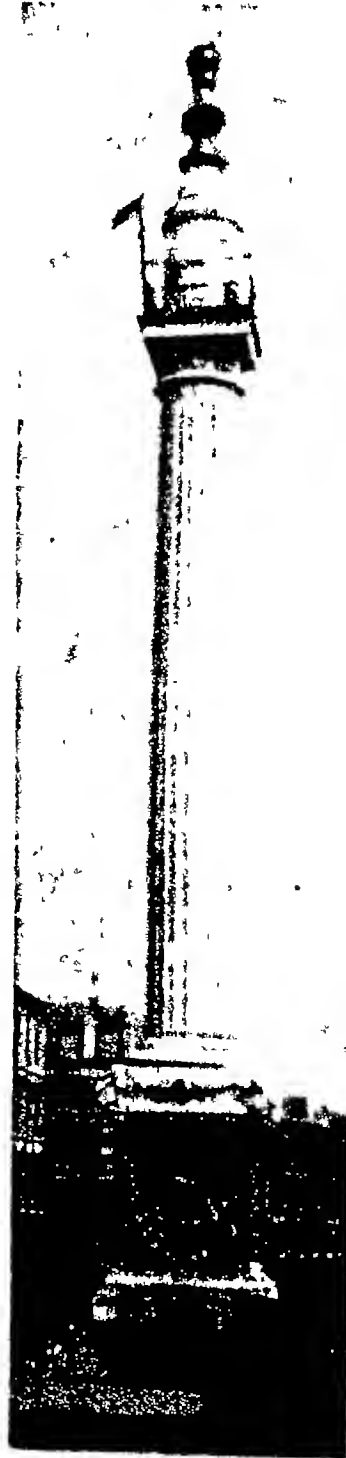


Baron de Montyon, French philanthropist

**Monument.** Any considerable

work of architecture or sculpture designed to commemorate an act or person important in national or local history. The term also embraces public buildings, official and otherwise, without such historical significance. See *Ancient Monuments*.

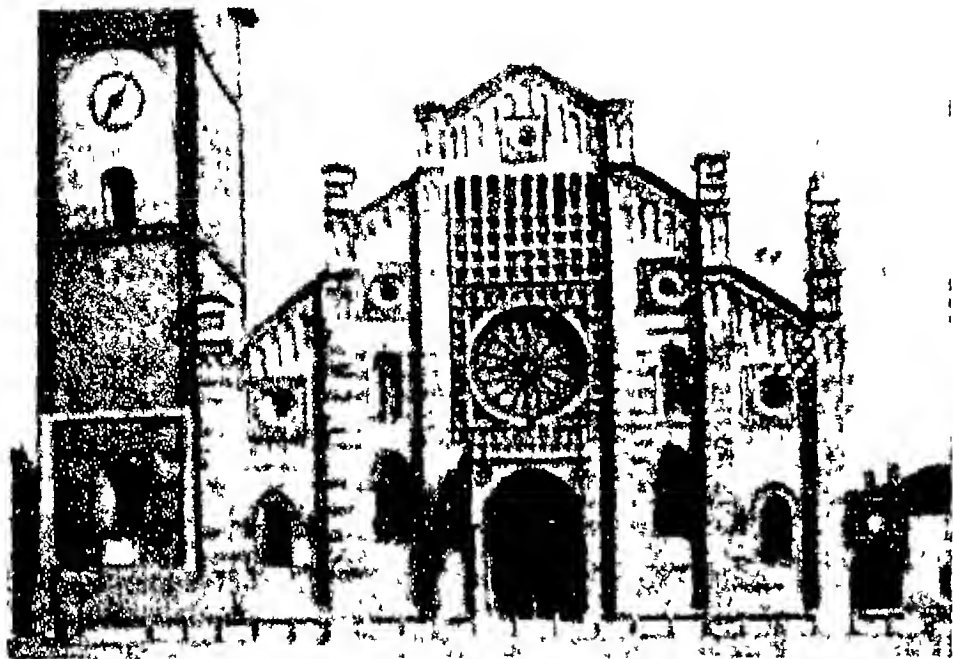
**Monument**, THE. A fluted column of the Doric order in Fish Street Hill, London. Designed by Wren to commemorate the Great Fire, it was completed in 1677 at a cost of £13,700, and stands near the house in Pudding Lane



Monument, London, from Fish Street Hill

in which the fire originated. The column is 202 ft. high and is surmounted by a metal urn and ball of fire 42 ft. high. Inside the column, a spiral stairway of 345 black marble steps leads to a railed platform surrounding the cornice. In the mid-19th century this platform was caged in after people had attempted to commit suicide by throwing themselves from the column.

Edward Pierce was the sculptor of the dragons at the four angles of the base of the column. C. G.



Monza, Italy. Façade of the 14th century cathedral of S. Giovanni Battista, in the Lombardo-Gothic style

Gibber executed the relief on the pediment, and Dr. Thomas Gale, dean of York, composed the Latin inscriptions. After the Titus Oates conspiracy, the City of London court of aldermen ordered the following inscription to be cut round the plinth of the monument in allusion to the unfounded charge that the Great Fire had been started by Catholics:

This pillar was set up in perpetual remembrance of that most dreadful burning of this Protestant city, begun and carried on by the treachery and malice of the Popish faction in the beginning of September in the year of our Lord 1666 in order to the carrying on of their horrid plot for extirpating the Protestant religion and old English liberty, and the introducing of Popery and slavery.

The inscription was obliterated by order of James II, but was cut deeper in the reign of William III, a circumstance inspiring Pope's indignant lines:

Where London's column, pointing  
at the skies,  
Like a tall bully, lifts the head and  
lies.

The inscription was finally erased in 1831. The Monument gives its name to a London Transport rly. station on the Inner Circle.

**Monumenta Germaniae Historicae.** Collection of ancient and medieval German documents. Its publication was started under the auspices of Stein in 1819. It comprises authors, laws, documents,

inscriptions, and letters, among which the work of historians and authors has yielded more than 60 huge volumes. From 1886 the undertaking was a matter of state. The Nazi government trusted it to the ministry of education and tried to exploit it for "racial" purposes. Much was lost with the destruction by bombing of the Prussian state library in Berlin.

**Monza.** City of Italy, in the prov. of Milan. The ancient Modicia, it is situated on the river Lambro, 8 m. by rly. N.N.E. of Milan, and was the ancient capital of the Lombard sovereigns. The treasures of the cathedral, founded 595 by Queen Theodelinda, include her crown and fan and the famous iron crown of Lombardy, with which Charlemagne was crowned in 774 and Napoleon in 1805. The church of San Gerardo is built in the form

of a rotunda. The town hall dates from 1293. Felt hats, cotton, silk, and leather goods are manufactured. Here, on July 29, 1900, King Humbert I was assassinated. Pop. (1951) 73,953.

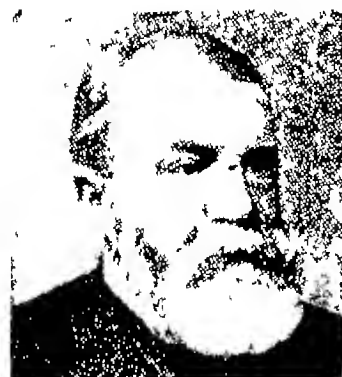
**Mood** (Lat. *modus*, manner) OR **MODE.** In grammar, the form of a verb which indicates the special manner in which an action is regarded. Moods are the indicative (simple statement), subjunctive (contingent), imperative (command). The infinitive is not really a mood, but the case of a noun. The subjunctive, so common in other languages, has no distinct form in English, although phrases like "if it be true," "if I were to go" represent the shade of meaning.

**Mood.** In medieval music, the relations of the large, the long, and the breve. If the two former were involved, it was called greater; if the two latter, then it was called lesser. Either might be perfect or imperfect. In the greater mood perfect, one large equalled three longs; if imperfect, two longs only. In the lesser mood perfect, one long equalled three breves; if imperfect, two breves only.

**Moodkee** OR **MUDKI.** Village of the Punjab, India. It is 26 m. S. of the Sutlej on the road from Karnal to Ferozepore. Here, on Dec. 18, 1845, was fought the first battle of the Sikh War of 1845-46. After a long and hasty march,

necessary owing to the rapid movements of the enemy, Sir Hugh Gough was unexpectedly attacked by the Sikhs, whose cavalry made a determined attempt to cut off the British line of retreat. A desperate battle ensued, marked by the flight of Gough's native troops, and, owing to the confusion, the firing of one white regiment into another. Eventually the British prevailed, and the Sikhs, leaving 17 guns behind them, fled. The British lost 872 killed and wounded out of 10,000 engaged. The Sikhs were perhaps 20,000 strong. See Sikh Wars.

**Moody, DWIGHT LYMAN** (1837-99). American revivalist. Born at Northfield, Mass., Feb. 5, 1837, he became a business man in Chicago. Later he took charge of a Y.M.C.A.; and after 1840 in company with Ira Sankey (1840-1908) travelled throughout America and Great Britain,



holding revival services. His later years were devoted to organizing a training institution for lay preachers at Northfield. He published volumes of sermons and addresses, and was associated with his colleague in the compilation of *Sacred Songs and Solos*, 1873. He died Dec. 22, 1899. There is a *Life*, by W. R. Moody, new ed. 1930.

**Moody, FANNY.** British soprano, whose career is noticed in the article on her husband, Charles Manners (*q.v.*).

**Moody, HELEN WILLS.** American lawn tennis player who became famous under her maiden name of Wills. See *Wills-Moody*.

**Moody, WILLIAM VAUGHAN** (1869-1910). American poet and dramatist. He was born at Spencer, Indiana, July 8, 1869, and educated at Harvard. After travelling in Europe he became instructor in English at Chicago university. The first of his poetic plays, *The Masque of Judgment*, 1900, was followed by *The Fire-Bringer*, 1904, and *The Faith-Healer*, 1909. In 1907 his prose play, *The Great Divide*, was produced in New York. He died Oct. 17, 1910, and in the same year was published *Gloucester Moors*. He collaborated with R. R. Lovett in *A History of English Literature*, 1907.

**Mook, HUBERTUS JOHANNES VAN** (b. 1894). Netherlands colonial administrator. He was born in



Batavia, and educated at Surabaya college and Amsterdam, Delft, and Leyden universities. He entered the legal department of the Netherlands Indies civil service in 1918. In 1940 he was chairman of the Netherlands delegation which discussed economic relations with Japan. After the Japanese occupation of the N.E.I., he escaped, reaching London in May, 1942, where he took up the posts

of colonial minister in the exiled Netherlands govt. and lieut.-gov.-gen. of the Indies. In Sept., 1944, he became head of a provisional govt. of the N.E.I. set up in Australia by Dutch royal decree; he returned to Batavia, Oct. 3, 1945, and played a leading part in setting up the united states of Indonesia (*q.v.*). But differences with the Netherlands govt. led to his resignation in 1948.

## THE MOON: ITS ASPECT AND PHASES

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*Related articles include those on Astronomy; Planet; Stars; Sun. See also Observatory; Telescope; and the biographies of Halley, Herschel, and other eminent astronomers*

The moon is the satellite of the earth. It revolves round the earth in 27.32 days in a nearly circular orbit, at an average distance of 238,857 m., the greatest and least values being 252,710 m. and 221,463 m. Its diameter is 2,160 m., and it shines by reflecting sunlight. Apparent changes of shape are due to the different amounts of the sunlit hemisphere that are turned towards us as the moon revolves. When nearly between the earth and the sun, its dark side is towards us, and it is usually invisible; this is called new moon; when 90° distant from the sun, we see half the sunlit hemisphere; this occurs at first and last quarter. The full moon is opposite to the sun, and appears fully illuminated. The interval between two new moons, a lunation, is 29.53 days; longer than the revolution, since the sun has advanced during the 27.32 days, and the moon requires 2 days more to overtake it. The ordinary year of the Jews and many ancient nations consisted of 12 lunations or 354 days; seven years out of 19 had 13 lunations, the agreement with the solar year being approximately preserved.

The moon's path round the earth makes an angle of 5° 8' 40" with the ecliptic, and intersects the ecliptic at two points, the nodes, which have a backward motion, going completely round the sky in 18½ years. When new moon occurs near either node, there is an eclipse of the sun. These eclipses are total only over narrow zones of the earth's surface, but lunar eclipses, which occur when the full moon enters the earth's shadow, are seen over an entire hemisphere. Even

when totally immersed in the shadow, the moon generally remains visible, of a coppery hue; the sunlight being bent into the shadow by refraction in the earth's atmosphere.

The moon, the density of which is only  $\frac{3}{8}$  that of the earth, plays the chief part in causing tides in our oceans. It attracts every part of



Moon. Age 14 days, 1 hour  
Photographed at Lick Observatory, Mount Hamilton, California, U.S.A., by courtesy of the Director

our globe, but the parts nearest to it are attracted more strongly than those farther away. A deformation is thus produced in the surface of the ocean. The moon's meridian passage gets later by about 50 minutes each day; the tides get later by about the same amount, but the matter is complicated by the fact that the sun also causes tides. The tide is a combination of the two gravitational forces.

The moon rotates on its own axis in the same time as that of its revolution round the earth, so always turning the same face to the earth. It is without an atmosphere, as

is proved by observation of the occultation of stars. This accords with expectation, as the surface gravity (about  $\frac{1}{6}$  that of the earth) is too small to retain an atmosphere for long.

To the naked eye the surface of the moon shows a number of grey spots; these were called "seas" by early observers, and the name remains, though they are merely plains, covered with some dark material. The chief of these bear the names Crises, Tranquillity, Serenity, Vapours, Showers, Storms, Clouds, Humours, Nectar, and Fecundity. Numerous craters are striking, the larger being fully 60 m. across. A small telescope will suffice to show them, the best time to look being about first quarter, since the shadows are most conspicuous then, and help to throw the surface into relief. Copernicus, one of the grandest, is 56 m. across; the interior is fairly level, but has a few peaks 2,000 ft. high. The ring round the crater is 12,000 ft. high. It is broken into

terraces, and has in places a slope of 60°. Copernicus, Tycho, Kepler, and Aristarchus are the centres of wonderful systems of bright rays or streaks which radiate from these craters, in star-like patterns, often several thousand miles in length. They are most conspicuous in the full moon, and pass indifferently over hill and valley, indicating their independence of these inequalities, and are probably formed of some crystalline substance, extruded from the interior through cracks in the crust.

There are a few continuous mountain ranges on the moon, in particular the Apennines, 460 m. long, well seen after first

quarter. The Alps are a smaller range, but interesting from the great valley through them, whose sides are so straight that they might have been cleft with a hatchet. There are numerous smaller clefts on the moon, known as rills. Near the crater Thebit is the Straight Wall, with one side 1,000 ft. higher than the other.

The origin of the craters is a matter of dispute. There are two theories current: that they are volcanic in origin, and that they result from meteoritic bombardment. Both explain the observed facts equally well. Few change



Aspect of the known face of the moon, showing the "seas," lakes and craters. The chief craters are numbered as follows:—1. Newton 2. Short 3. Moretus 4. Clavius 5. Schellner 6. Bacon 7. Maginus 8. Longomontanus 9. Schiller 10. Schickard 11. Wilhelm I. 12. Tycho 13. Stoeffler 14. Hainzel 15. Walter 16. Riccius 17. Furmerius 18. Piccolomini 19. Pitatus 20. Purbach 21. Sacrobosco 22. Fracastorius 23. Petavius 24. Arzachael 25. Thebit 26. Hippalus 27. Cassendi 28. Alpetragius 29. Catherina

30. Cyrillus 31. Theophilus 32. Vendelinus 33. Langreen 34. Guttemberg 35. Albategnius 36. Alphonsus 37. Ptolemy 38. Bonpland 39. Reaumur 40. Hipparchus 41. Letronne 42. Grimaldi 43. Flamsteed 44. Encke 45. Riccioli 46. Copernicus 47. Stadius 48. Pallas 49. Pliny 50. Meneius 51. Aristarchus 52. Cleomedes 53. Linnaeus 54. Autolycus 55. Aristillus 56. Archimedes 57. Cassini 58. Struve 59. Eudoxus 60. Aristotle 61. Plato 62. Gartner 63. Endymion 64. Atlas 65. Hercules.

#### MOON APPEARANCE OF THE EARTH'S SATELLITE TO A TERRESTRIAL OBSERVER

Based on Nasmyth and Carpenter's Picture Map By courtesy of John Murray

have ever been observed on the moon's airless, waterless surface, owing to the absence of weathering. The surface reflects sunlight and conducts heat as brown pumice dust would be expected to do.

The lunar seas were evidently once covered with liquid. Fracastorius, on the border of the sea of Nectar, was once a complete ring, but the wall towards the sea has been destroyed, leaving, however, a mark to show where it stood. Numerous marks of other ruined formations are discernible on the seas. The destroying agency is thought to have been liquid lava

either ejected in sudden streams from the interior, or produced by the impact of some large body from outside.

While there is no present volcanic activity on the moon, there is an agency which may produce some changes in it; this is the great difference of temperature between day and night. The rocks in the sunshine probably reach the temperature of boiling water, while at night, a fortnight later by terrestrial reckoning, they reach  $-243^{\circ}\text{F}$ . The alternate expansion and contraction may cause the occasional collapse of

steep walls. Thus the crater Linnaeus, formerly described as very deep, is now a shallow, whitish depression.

The complex problem of the motion of the moon arises from the action of the sun, whose attraction on the earth and moon is appreciably different. The eccentricity of the orbit, the direction of its major axis, the orbit-plane, are all continually changing. The earth's equatorial protuberance and the planetary attractions also produce appreciable disturbances.

The precession of the equinoxes arises from the attraction of the



sun and moon, especially the latter, on the earth's equatorial protuberance. It is a slow reeling of the earth's axis, causing it to sweep out a circle in the sky, 47° in diameter, in a period of 26,000 years. It was discovered by Hipparchus. It enables us to fix the date when the constellations were mapped out and named (about 2,700 B.C.), that being the date when the south pole occupied the centre of the region left blank by the early observers.

**Bibliography.** The Moon, R. A. Proctor, 3rd ed. 1886; The Moon, Considered as a Planet, a World, and a Satellite, J. Nasmyth and J. Carpenter, 1903; The Moon, W. H. Pickering, 1904; The Moon, W. Goodacre, 1931.

**Möön.** Name sometimes used for the Estonian island of Muhu (*q.v.*) in the Baltic Sea.

**Moon, WILLIAM** (1818-94). British inventor. Born at Horsmonden, Kent, Dec. 18, 1818, he became partially blind as a child and totally blind in 1840. In 1845 he invented a system of embossed type for the blind, which was widely used. To facilitate the publication of the Bible in his type he invented a process of stereotyping which much reduced the cost of production. So successful was his system that he extended it to foreign languages. His wife, born blind, had imagined horses as standing upright on two legs. Moon thereupon produced pictures in relief, which could be studied by blind people. He died at Brighton, Oct. 10, 1894.

**Moonlighters.** Name given to perpetrators of outrages in the Irish agrarian disturbances of 1880-87. Following the rejection by the house of lords of the Compensation for Disturbances Bill, which was to check evictions and to restrain landlords, a series of outrages took place, usually at night. Murder, cattle-maiming, arson, and pillage were frequent, and the Moonlighters instituted a reign of terror which lasted until Balfour's Crimes Act of 1887. See Coercion Acts; Ireland.

**Moonlight Sonata.** Composition by Beethoven. Popular name given to the Sonata quasi una fantasia in C sharp minor, the second of two which together form Beethoven's op. 27. The title is said to have been derived from an expression of Rellstab, the critic, who compared the first movement to a boat wandering by moonlight on the Lake of Lucerne. One of the most popular of Beethoven's pianoforte works,

it was dedicated to the Contessa Giuletta Guicciardi.

**Moonrakers.** Name applied to natives of Wiltshire. It is traced to a story of some countrymen who, seeing the moon's reflection in a pond, tried to rake it out. But another version tells that they were smugglers who, surprised while dragging for hidden kegs of brandy, baffled the excisemen by assuming this simplicity.

**Moonstone.** Semi-precious stone. It is a translucent, colourless feldspar, mostly orthoclase or albite, which is usually cut *en cabochon*, but also faceted. It reflects a bluish milky light, hence its name. It is also known as fish's eye, wolf's eye, and water opal.

**Moonstone, THE.** Novel by W. Wilkie Collins (*q.v.*), first published in 1868. Turning upon the possession of a valuable diamond, the highly intricate plot, which abounds in dramatic situations, is developed in the successive narratives of the various parties to the drama. The novel is one of the first detective stories to command a place as serious literature.

**Moonta.** Township of S. Australia. It stands on Spencer Gulf, 134 m. by rly. N.N.W. of Adelaide, and has carried on copper mining since 1861. Pop. 3,300.

**Moonwort** (*Botrychium lunaria*). Fern of the family Ophioglossaceae. A native of Europe, and the



Moonwort. The two branches of frond

temperate and cold regions of both hemispheres, it has a small tuberous rootstock and fleshy roots. It produces a single annual frond which is divided, one branch bearing a double row of half-moon-shaped leaflets, the other branch having secondary branches which bear rows of leathery spore-capsules, ultimately splitting to release the spores. Formerly it was believed to have the magic power of loosening locks, bolts, nails, etc.

**Moor.** A term somewhat loosely applied to tracts of unenclosed, usually high lying land, not primarily used for pasture. It probably has its origin in a word meaning to die and thus originally connoted dead or sterile. The soil of moorland is characteristically acid, be it relatively dry, or a deep,

wet peat. Hence it is unfavourable to the growth of many crop plants. On the other hand soil acidity encourages the development of heather, bilberry, mat grass, and a number of other oxyphilous species, one or other of which forms the predominating vegetation of moorland. In this sense the term embraces the bogs of Ireland where sphagnum abounds, the mosses of the Pennine chain where cotton grass predominates, those areas covered with deer sedge in the west and north-west of Scotland, on Exmoor and Bodmin moor in S.W. England, and the granite areas of the last locality, which have purple moor grass as their chief plant inhabitant. In a more restricted sense, the heather-covered grouse moors of Scotland, similar areas in Somerset, of the Pennines, the Wicklow, and the Mourne mountains are more typical. Their vegetation resembles that of the lowland heath closely except in containing a greater proportion of lichens, liverworts, and mosses and in that bilberry occurs in place of heather. Both have moderately free soil drainage and a relatively thin layer of peat in contrast to the wet conditions of the bog and moss. The acid conditions present favour the development of the fungus *Phoma* with which heather must establish mycorrhizal relations in order to live. In both, too, conditions such as recurrent fires or strong winds prevail and so prevent the establishment of trees in numbers sufficient to compete with the heather to its ultimate extinction. See Mycorrhiza. Consult The British Islands and their Vegetation, A. G. Tansley, 1939.

**Moor, SIR FREDERICK ROBERT** (1853-1927). South African statesman. After working in the Kimberley diamond mines, 1872-80, he settled in Natal, and in 1886 was elected to the legislative assembly. Minister for native affairs, with a brief interval, from 1893 to 1906, he was identified with all movements furthering the self-government of the state, and in 1906 became premier. Attending the 1907 colonial conference of premiers, in 1910 he held, conjointly with the premiers, the portfolio of commerce and industries in the cabinet of South Africa. He was knighted in 1911, and died March 18, 1927.

**Moorcroft, WILLIAM** (1872-1945). British potter. Born Mar. 27, 1872, he studied art at S. Kensington and Paris. A skilled potter, painter, and chemist, he spent the greater part of his life in originat-

ing and developing the pottery named after him, exhibiting regularly at British and foreign exhibitions. In 1928 he was appointed potter to Queen Mary, and showed 11 pieces of his ware at the Exhibition of British Art in Industry, 1935. He died at Trentham, Staffs, Oct. 14, 1945. He is represented at the Museum of Fine Arts, Syracuse, N.Y., U.S.A., and at Toronto art gallery.

**Moore, ALBERT JOSEPH** (1841-1893). British painter. Born at York, Sept. 4, 1841, he studied at the York School of Design before going to the R.A. schools in London in 1858. He went direct to nature, sketching in the Lake district, and the N. of France.



A. J. Moore,  
British painter

He did much decorative work including mosaic panels for the central hall in the houses of parliament. In 1883 he painted *Reading Aloud*, his best-known work. His chief pictures include: *Blossoms* (Tate Gallery), 1881; *Dreamers*, 1882; *Summer Night*, 1890. He died Sept. 25, 1893.

**Moore, GEORGE** (1852-1933). An Irish writer. He was born at Moore Hall, co. Mayo, Ireland, on Feb. 24, 1852. Educated at Oscott, he spent 10 years studying art in Paris, where he met Manet (whose portrait of him is in the Metropolitan Museum, New York) and other Impressionists. Doubtful of his ability as a painter, he settled in London and became a writer. His first publications were poems, strongly influenced by Baudelaire: *Flowers of Passion*, 1872, and *Pagan Poems*, 1882. These were without merit, and he abandoned poetry for prose.

*A Modern Lover*, 1883, attracted little attention, but *A Mummer's Wife*, 1885, and *A Drama in Muslin*, 1886, were among outstanding novels of their time. *Esther Waters*, 1894, most ambitious of his realistic novels, established his fame, and marked the end of his first phase.

After the outbreak of the S. African War, Moore, who adopted a pro-Boer attitude, lived in Dublin 1901-10. He wrote for the Abbey Theatre, and became absorbed in the revival of Irish as a living language. During his sojourn there he produced two important volumes, *The Untilled Field* (short stories), 1903; and

*The Lake*, 1905. *Memoirs of My Dead Life*, 1906, was the forerunner of a long autobiographical work first appearing as a trilogy *Ave, Salve, Vale*, 1911-14, and

later published in two volumes as *Hail and Farewell*.

*The Brook Kerith* (dramatised as *The Passing of the Essenes*, 1931)—a romantic reconstruction of the life of Christ—marked the culmination of his powers as a stylist, though as literature it has been described as one of the most placid books in the language.

To Moore's later years belong two further autobiographical works notable for brilliant dialogues: *Avowals*, 1919; and *Conversations in Ebury Street*, 1924. The latter ranks with *Hail and Farewell* as a masterpiece of observation and philosophical disquisition. His last years were spent in revising his earlier works. He died in London Jan. 21, 1933.

Whimsical, individualistic, and perverse, Moore antagonised many by his love of self-dramatisation and exaggeration. In his artistry and eloquence as a writer he has few equals. *Consult* *Lives*, J. Freeman, 1922; H. Wolfe, 1931; *Letters* (ed. J. Eglinton), 1942; G. M., *Memories*, N. Cunard, 1956.

**Moore, GRACE** (1901-1947). American singer and film actress. Born at Jellicoe, Tenn., U.S.A., Dec. 5, 1901, she was educated there, and studied singing at Washington. After making her début in musical comedy at Boston, she later appeared in New



Grace Moore,  
American singer

York and in 1924 continued her singing studies in Europe, appearing in *La Bohème* at Milan. She repeated her performance at the New York Metropolitan and scored an immediate success. She first appeared at Covent Garden in 1935. Making her screen début in 1930, she achieved great success in *One Night of Love*, 1935. Later films included *Love Me Forever*, *The King Steps Out*, *For You Alone*. She was killed in an air crash at Copenhagen airport on her way to Stockholm,



George Moore,  
Irish author

Jan. 26, 1947. Her autobiography *You're Only Human Once* appeared shortly after her death.

**Moore, HENRY** (1831-1895). British painter. Born at York, March 7, 1831, he studied under his father, and entered the R.A. schools in 1853. In 1886 he was elected A.R.A., and in 1893 R.A. A prolific artist and frequent exhibitor, his chief works, paintings of the sea, include *A White Calm*, 1858; *Catspaws off the Land*, 1885 (Tate Gallery); *Clearness After Rain*, 1887; *A Breezy Day in the Channel*, 1888; *Summer at Sea*, 1893. He died at Margate, June 22, 1895.

**Moore, HENRY** (b. 1898). British sculptor. Son of a coal miner, he was born at Castleford, Yorks, July 30, 1898, and educated at the grammar school there. After the First Great War he studied at Leeds and the Royal College of Art. Influenced by negro



Henry Moore,  
British sculptor

and Mexican sculpture, his work was characterised by monumentality and strength, displaying a strong feeling for the simple, rounded forms of life, and the effect of natural forces upon stone. In his later drawings, especially those inspired by scenes in London air raid shelters during the Second Great War, he achieved depth and originality of design more intricate than could be contained in isolated objects of stone. Appointed a trustee of the Tate Gallery, 1941, he occupied a leading position among contemporary sculptors, and held one-man exhibitions at the chief galleries of London and New York. He was made C.H. in 1955. Examples of his work are at the Tate Gallery and Victoria and Albert Museum, London, and Museum of Modern Art, New York. *See illus. in p. 637.*

**Moore, SIR JOHN** (1761-1809). British soldier. Born in Glasgow, Nov. 13, 1761, he was a son of Dr. John Moore (1729-1802), author of *Zeluco*. Educated at Glasgow High School, he entered the 51st Foot in 1776, and served in America during the War of Independence. In 1794 he was in Corsica, after which he went on an expedition to Santa Lucia. He served against the Irish rebels in 1798, in the Netherlands in 1799, and in Egypt in 1802, by which time his reputation as a soldier stood very high.



Having been knighted, he was, in 1803, chosen to command the troops at Shorncliffe, and it was



*John Moore*  
After Lawrence

there that he trained the regiments, among them the 43rd and 52nd, of the light division. In 1806 Moore was sent to the Mediterranean, and in 1808 he led a division on an abortive attempt to assist Sweden. Returning therefrom he was ordered to Portugal, and was soon in command of the British troops there. Events made it necessary for him to fall back to Corunna, where his men turned and fought the French, Jan. 16, 1809. Moore was mortally wounded and died on the 17th. The circumstances of his burial are known through Rev. C. Wolfe's poem. For six years, 1784-90, Moore was a Scottish M.P. He enjoyed the friendship of Pitt and the duke of York, who, like others in authority, thought highly of his soldierly qualities. See *Corunna* illus. p. 2392; *Peninsular War*; consult *Lives*, J. F. Maurice, 1897; *Carola Oman*, 1953; *Diary*, ed. J. F. Maurice, 1904.

**Moore, MARY** (1861-1931). British actress. Born in London, she made her stage debut in 1885. After the death of her first husband James Albery (*q.v.*) in 1889, she appeared under the management of Charles Wyndham, in whose productions she played the lead. Her earliest success was in the rôle of Ada Ingot in *David Garrick*, and she later appeared in plays by H. A. Jones and H. H. Davies. She married Wyndham in 1916, and was joint proprietor with him of the Wyndham's and New Theatres. She died April 6, 1931.

**Moore, THOMAS** (1779-1852). Irish poet and biographer. Born in Dublin, May 28, 1779, the son of a grocer, he was educated at Trinity College, and came to London in 1799. In London, as elsewhere, his engaging personality and unusual gifts quickly procured for him a large circle of distinguished friends.

A volume entitled *Poetical Works of the Late Thomas Little* appeared in 1801. In 1803 he was appointed registrar of the Admiralty Court, Bermuda, but returned to England after a year, leaving a deputy.

In 1806 appeared his *Odes and Epistles*, which included the Canadian Boat Song. A scathing criticism in *The Edinburgh Review* led to an abortive duel with Jeffrey (*q.v.*), after which the two combatants became firm friends. In 1807 the publication began of the



*Thomas Moore*  
After Lawrence  
(courtesy of  
Mr John Murray)

*Irish Melodies*, with music by Sir John Stevenson, upon which Moore's fame largely rests. Like all his poetry, they are tuneful, graceful, but often artificial and without depth. The *Melodies* brought a fixed income of £500 a year, the brilliant and enormously successful Eastern poem *Lalla Rookh* (*q.v.*), 1817, brought £3,000, and Moore enjoyed a vogue second only to that of Byron. But the default of Moore's deputy in Bermuda for £6,000 brought financial disaster, and Moore was compelled to seek refuge in Paris till 1822. He returned to London, and at his country house, Sloperon Cottage in Wiltshire, spent the remainder of his life. In 1811 he married Bessie Dyke (d. 1865), an actress.

The great work of the latter part of Moore's life is his biography of Byron, 1830, which, though deficient on the critical side, remains the standard authority. He also issued an edition of Byron's works, and wrote biographies of Sheridan, 1825; and Lord Edward FitzGerald, 1831. He received a literary pension of £300 in 1835, and a civil list pension in 1850. He died Feb. 25, 1852.

**Moore, THOMAS STURGE** (1870-1944). British poet and artist. He was born Mar. 4, 1870, and educated at Dulwich. He became a pupil of Charles Ricketts (of whom he later wrote a short biography) and was a distinguished wood engraver. His first volume,



T. Sturge Moore,  
British poet and artist

*The Vinedresser and Other Poems*, appeared in 1899, and he published his *Collected Poems* in 1932. His prose works included *Art and Life*, 1910; and *Armour for Aphrodite*, 1929. He died July 18, 1944.

**Moorfields.** London thoroughfare. Between Finsbury Pavement and Moor Lane, E.C., it opens N. out of Fore Street. Its name is all that is left of an area once fenland, and more recently known as Finsbury Fields. First drained in 1511, laid out into walks 1606, it was built over in the 18th and early 19th centuries. Bethlem hospital, formerly a convent, stood here from 1676 until its removal in 1815 to St. George's Fields, Lambeth. The old fields are covered by Finsbury Circus and Square. Near by is the well-known Moorfields eye hospital.

**Moorgate.** London thoroughfare. Running N. from Lothbury to London Wall and Finsbury Pavement, it was named from a postern gate in the old city wall which opened into Moorfields. The gate was set up in 1415, rebuilt in 1472, and taken down in 1762. In 1922 Moorgate Street with Finsbury Pavement became Moorgate. It was comparatively untouched by the bombing of the Second Great War. See *Finsbury*.

**Moor Hen.** Alternative name for the Water Hen (*q.v.*).

**Moorings.** Arrangement of chains, anchors, or heavy iron blocks, and buoys, to which ships can make fast. They are laid permanently in a harbour. Vessels lying alongside a jetty are said to be moored there. Moorings for airships took the form of a lofty lattice mast of steel, to the top of which the airship is fastened by the nose, swinging in any direction with the wind. A lift running inside the mast carries passengers, crew, and cargo from the ground to the airship, while pipes carry supplies of water, gas, and engine fuel. One of the largest airship mooring masts was erected at Cardington, Beds.

**Moorish Architecture.** Term commonly applied to the Hispano-Moresque style developed by the Moorish conquerors of Spain, and illustrated in such buildings as the mosque of Córdoba and the Alhambra at Granada. It formed a distinctive phase of Mahomedan architecture (*q.v.*). See *Arch.*

**Moor Park.** Name of two English parks. One is 1 m. E. of Rickmansworth, Herts, and was enclosed about 1460. The mansion was built in 1673, and reconstructed in 1720. The park was bought by Lord Leverhulme, 1919.

and turned into a residential district. It has a famous golf course. Moor Park is a station on the Met. rly.

The house and land on the banks of the Wey 2 m. E. of Farnham, Surrey, was formerly known as Compton Hall, its name being altered to Moor Park, after the place in Herts, when it was bought by Sir William Temple about 1682. Here Swift, when Sir William's secretary, wrote *The Battle of the Books* and *Tale of a Tub*, and first met Esther Johnson (Stella). The place is also associated with Dorothy Osborne.

**Moors.** Name in popular usage for the Muslim population of mixed Berber and Arab descent in N.W. Africa. The Mauri of the Mauretanian kingdom of Roman writers were Berbers. The Arab irruption of the 8th century which led to the invasion of Spain resulted in some racial blending, and the subsequent return to Morocco of Hispanified Saracens (Moriscos) brought in an Andalusian element. The Arabic-speaking Moor is thus the resultant of many forces, social and ethnic. The name was extended by early Portuguese adventurers to the Arabian settlers in India and Ceylon. *See* Morocco; Spain.

**Moose** (*Alces Americana*). Largest living member of the deer family, distinguished by its size, long pendant muzzle, and broadly palmated antlers. It occurs under the name of elk in Europe; but the name moose is restricted to the American species, which occurs in Canada and in the U.S.A. from Maine to N. Dakota. Alaska is now its chief home; incessant hunting has made it rare in the less remote forests of N. America. A fine male stands nearly 7 ft. high, and weighs over 1,000 lb. It keeps to the more secluded parts of the forest regions.

In the summer it visits the swampy ground near lakes, but in winter resorts to the higher ground. Here it is usually found in families, consisting of the male and female and the young of the past two seasons; and a "yard" is formed by treading down the deep snow. In the mating season the males are highly dangerous, fight furiously, and are often lured to destruction by hunters who imitate the cry of

the cow moose. Notwithstanding its great size and clumsy appearance, the moose travels at great speed and with curious noiselessness through the densest forests. It is mainly hunted for sport, but its flesh makes good venison, and its hide is converted into leather. *See* Deer; Elk; Ice Age.

**Moosehead.** Lake of Maine, U.S.A. The most extensive lake in New England, lying on the borders of Piscataquis and Somerset cos., it measures 35 m. by 12 m. at extremes, and covers about 120 sq. m. The Kennebec issues from its W. side. The lake lies at an alt. of 1,000 ft., abounds in fish, and is the gateway to wild country frequented by sportsmen.

**Moose Jaw.** City of Saskatchewan, Canada. It stands on Moose Jaw river, 398 m. W. of Winnipeg and 420 m. E. of Calgary, and is a divisional point on the C.P.R., served also by C.N.R. and Soo Line. An agricultural centre, it has the biggest stockyards W. of Winnipeg. Pop. (1956) 29,603.

**Moot.** Literally a meeting, the word being akin to meet. It was used among the Anglo-Saxons for meetings of freemen, and so we hear of folkmoots, shiremoots, and the like, while Witanagemot is another compound. It survives in English in the moot hall. Law students at the Inns of Court call their legal debates moots. *See* Folkmoot; Witanagemot.

**Mop Fair.** Statute fair formerly held in England at which farmers engaged servants and labourers.

The name was derived from the circumstance that servants carried a mop as an indication that they were waiting to be hired. Carters fastened to their hats a piece of whipcord, shepherds a tuft of wool, grooms a sponge, and so on. Sometimes a second fair was held soon after the

statute fair for the benefit of those persons not already engaged. Engagements made at a mop fair were for one year, but with the growing practice of hiring for shorter periods, mop fairs degenerated into pleasure fairs.

**Moplahs.** A people partly of Arab origin mainly living in Malabar. Tradition has it that the Moplahs, whose local name is

Mappilla, are descended from the union of Malabar women with Arab traders, who arrived on the Malabar coast in the 3rd century. As the fathers usually returned to Arabia, the custom grew up of giving the children the names of their mothers; hence the word "Mappilla," and matriarchal customs survived. By religion the Moplahs are fervent Muslims and their fanaticism has on occasion burst out in violence. The last serious outbreak was in 1922 and was suppressed only after serious fighting involving heavy casualties. An attempt was made to enlist Moplahs into the Indian Army, and in 1897 a battalion was raised. The experiment proved a failure and the battalion was disbanded. The number of Moplahs is estimated at 1,500,000.

**Mopsus.** In Greek legend, the name of two famous soothsayers: (1) The son of Manto, the daughter of Tiresias (*q.v.*) and Apollo. Having built the city of Mallos in Cilicia, together with Amphilocheus, the son of Amphiaras, a quarrel arose concerning the possession of it, in which both were slain. Mopsus had oracles at Colophon and Mallos, and Mopsuestia is named after him. (2) One of the Lapithae. Son of Apollo and one of the nymphs, he took part in the voyage of the Argonauts, for whom he acted as seer. He died during the journey from the bite of a snake in Libya.

**Moquegua.** Maritime prov. of S. Peru. It is bounded S. by Tacna and W. by the Pacific. Traversed by the Andes, whose slopes are fertile and well populated, it produces copper, silver, coal, marble, sulphur, etc.; the vine is widely cultivated. Its area is 5,549 sq. m. Pop. (1956 est.) 47,430.

Moquegua, the capital of the prov., is 68 m. by rly. N.E. of the port of Punta Coles on the Pacific, which is connected by rly.

**Mora** (Lat., delay). Term in Scots law for delay in pursuit of a legal remedy disentitling a person to relief by the courts. *See* Laches; Limitations.

**Mora** (*Dimorphandra mora*). Forest tree of the family Leguminosae, native of British Guiana and Trinidad. It attains a height of 150–200 ft.; its leaves are divided into two rows of leaflets, and the small flowers are combined in dense spikes. The large, woody pods each contain a kidney-shaped seed. The timber is of great value to the shipbuilder, being hard, tough, and close grained like oak, with no tendency to splintering.



Moose. Specimen of the great Alaskan moose  
*Amer. Mus. Nat. Hist.*



**Moraceae.** Botanical term for the mulberry family, often included in Urticaceae (*q.v.*). See Mulberry.

**Moradabad.** Dist. and city of India in the Rohilkhand division, Uttar Union. The dist. is in the plains E. of the Ganges; chief crops are wheat and millet. The city is on the Ramganga, and has small manufactures in brass and tin. Area, 2,288 sq. m. Pop. (1951) dist., 1,660,955; city, 161,854.

**Moraine** (French). Rock waste accumulated on the surface of a glacier or ice sheet. Lateral moraines are found each side of a glacier, and are formed from the detritus which falls down the valley sides. The uniting of two tributary glaciers produces a medial moraine. Beneath the glacier or ice sheet is the ground moraine or *moraine profonde*. Material transported by the glacier and deposited at its snout by the melting of the ice forms a crescentic terminal moraine.

**Morality** OR MORALITY PLAY. Early form of the drama, which most probably developed out of the earlier mystery and miracle plays. It is believed to have grown into popularity in the first half of the 15th century. The morality differed from the miracle play in that it was not concerned with the presenting of an established Biblical story with named characters, but was rather a play enforcing a moral truth or lesson, based upon the Christian ethic, by means of personified abstractions. The fact that such personifications appeared in some of the miracle plays suggests that in them may be found the origin of the moralities. Everyman, which allegorises man's life and death, Mankind, Youth, Lusty Juventus, Nature of the Four Elements, Hickscorner, and Magnificence, by John Skelton, are notable examples.

**Bibliography.** The Medieval Stage, E. K. Chambers, 1903; English Miracle Plays and Moralities, E. H. Moore, 1907; English Miracle Plays, Moralities and Interludes, A. W. Pollard, 4th ed. 1914.

**Moral Rearmament.** Name given by Frank Buchman (*q.v.*) to the religious campaign inaugurated by him in East Ham town hall, June, 1938. World Assemblies for Moral Rearmament were held at Interlaken, 1938, and Monterey, California, 1939. The movement attracted great attention and numbered several popular figures among its converts; but it lost ground when some of its prominent followers declared themselves conscientious objectors to war, a doctrine which in view of the

threat from Germany at that time was unpopular among the masses. It survived the Second Great War, and in 1948 three hotels were acquired at Caux, Switzerland, and the movement became the Moral Rearmament Foundation. See Oxford Group.

**Morand, PAUL** (b. 1888). A French diplomat and writer. Born in Paris, March 13, 1888, he was educated at the Sorbonne and Oxford University. Entering the French diplomatic service, he was secretary to the French embassy in Rome and Madrid. Liaison officer between the British ministry of economic warfare and the French ministry of blockade, 1939-40, he was then Vichy ambassador to Rumania 1940-44.

In 1921 he published his first novel, *Tendres Stocks*, but it was with the publication of *Fermé la Nuit*, 1922, and *Ouvert la Nuit*, 1923, both of which were translated into English, that he established a reputation as a graphic delineator of the sophisticated society of urban Europe after the First Great War. His principal characters were women, and his style, considerably influenced by the more tinsel side of the cinema, captured to a remarkable degree the after-the-war abandon of the 1920s. *L'Europe Galante*, 1925, is a daring series of stories about women, while *Buddha Vivant*, 1927, was a not very successful attempt to probe the soul of Asia. Among his later novels were *Magie Noire*, 1928; *Flèche d'Orient*, 1932; *Les Extravagants*, 1936. He also wrote a considerable amount of free verse, and in 1942 published a life of de Maupassant. *Journal d'un attaché d'ambassade*, 1948, described his experiences in the diplomatic service.

**Morane-Saulnier.** Firm of French aircraft designers and manufacturers with works at Puteaux and Ossun. Formed in 1911, the company built some of the most successful monoplane fighters used by the French and British in the First Great War. In the later stages of the war the company developed small, high-speed fighter biplanes, similar to the Fokker fighter used by the German air force. Between the wars Morane-Saulnier concentrated upon single-seater fighters, and the M.S. 406, which was the standard fighter in France's air force in 1939, was in action up to the defeat of France in 1940. During the occupation the Morane-Saulnier factory was compelled to work for the Germans and produced for the Luftwaffe the

Fieseler Storch army cooperation monoplane. After the war the company specialised in fighters, trainers, and light civil aeroplanes.

**Morant, SIR ROBERT LAURIE** (1863-1920). British civil servant. He was born April 7, 1863, and educated at Winchester and New College, Oxford. He became tutor to the royal family of Siam, and was given the task of reorganizing the national system of education in Siam. Returning to England, he joined the board of Education as examiner in 1894. In 1895 he was made assistant director of special inquiries and reports, and he made his reputation by framing the Education Act of 1902. Permanent secretary of the board of Education, 1903-11. Morant was knighted in 1907, and in 1911 was selected by Lloyd George as first chairman of the health insurance commission. The first secretary of the ministry of Health, 1919 he died on March 13, 1920.

**Morar.** Loch of Inverness-shire, Scotland, in the very W. of the county. It is 12 m. long, with an extreme breadth of 2. m. Its waters are carried to the sea by a short stream. The district around is called Morar.

**Morat** (Ger. Murten). Town of Switzerland, in the canton of Fribourg. It stands on the S.E. side of Lake Morat, 18 miles by rly. W. of Berne, and is connected by steamboat and rly. with Neuchâtel. Its old town gate and walls are well preserved, and in its town hall is a unique collection of Burgundian weapons. Its 13th-century castle, with a garrison of 1,500 men, resisted the artillery of Charles the Bold for 10 days before the battle of Morat, June 22, 1476, when Charles sustained a disastrous defeat. Morat was taken from Savoy by the Swiss in 1475, and annexed to Fribourg in 1814. The lake has an area of 10½ sq. m., and is connected by the Broye with Lake Neuchâtel. On its banks prehistoric dwellings have been found.

Morat is the only German-speaking and Protestant town in Fribourg. Pop. (est.) 3,500.

**Moratalla.** Town of Spain, in the prov. of Murcia. It stands on an affluent of the river Segura, 40 m. N.W. of Murcia, and 6 m. E. of Calasparra station. Wine and olive oil are produced; a coarse kind of cloth, soap, and alcohol are made. Pop. (1950) 14,117.

**Moratorium** (Lat. *mora*, delay) Literally, postponement, a period in which no business engagements can be completed, or debts or

other liabilities enforced. In times when a financial panic is feared, a government will sometimes declare a moratorium for a certain number of days, thus giving public confidence a chance to recover. On the outbreak of the First Great War a royal proclamation declared a moratorium of a month in Great Britain for all bills of exchange. On the outbreak of the Second Great War, the Courts (Emergency Powers) Act prevented the recovery of most debts without the leave of the court.

**Morava.** River of Moravia, also known as the March (*q.v.*).

**Morava.** River of Yugoslavia. It is formed by the junction of the southern Morava and the western Morava, which occurs near Krushevatz. The S. Morava rises in the height of land stretching E. from the Kara Dag, above Üsküb, partly in Serbia and partly in Bulgaria, from the other side of which flows the Vardar, and its course is N. to its junction with the W. Morava, which rises in the Gotija range, S. of Ushitse. The combined rivers, known as the Morava, wind N., and fall into the Danube, after a course of about 250 m., near Semendria. The Morava and the Vardar form a great natural sunken corridor in the Balkans from Belgrade to Salonica.

**Moravia.** Central portion of the republic of Czecho-Slovakia, formerly the Austrian prov. of Mähren in Austria-Hungary.



Moravia arms

Physically it is separated from the rest of the republic and is almost wholly the basin of the March or Morava, sloping S. towards the basin of Vienna from the Sudetes on the N.W., except in the N.E., where the Moravian Gate, between the Sudetes and the Carpathians, leads N. to Silesia and Galicia. The Thaya valley is roughly the S. boundary, separating Moravia from Slovakia. The height of land between Moravia and Bohemia averages 1,500 to 2,000 ft., with passes near Jihlava and Zwittau. The March is the chief river, for the Oder and the Vistula merely begin within the province; its main affluent is the Thaya, which is fed by the Jihlava, Svitava, and Suratka.

A quarter of the country is forested, chiefly with pines and oaks. Rather more than half is cultivated, and, the soil being fer-

tile, Moravia was in many respects the most productive agricultural province of the Dual Monarchy of Austria-Hungary. In the S., maize, fruit, and vines; in the centre, wheat, barley, and sugar beet; and in the N., rye, oats, flax, and potatoes are the staple farm products. Cattle are numerous, especially in the Moravian Gate; horses thrive in the centre; goats and merino sheep are numerous. Coal is mined on the Silesian border, W. of Brno; iron ore is mined in the Sudetens. Brno is the capital; other towns being Ostrava, Olomouc, Jihlava, and Přerov. The rly. system partially centres on Brno, but in the S.W. and on the E., main lines from Prague and Silesia respectively run to Vienna without touching Brno; the main line between Brno and Prague is not direct, but is diverted to the N.

Before the advent of the Magyar hordes in central Europe, Moravia was inhabited by Slavs. In the 9th century the people became Christians, at the instance of the Greek missionaries, Cyril and Methodius. Moravia was held by the Czech rulers of Bohemia during the 10th century, and Ottakar II, 1253-78, who had governed Moravia during his father's lifetime, extended the Czech power to the Adriatic. King Matthias of Hungary also ruled over Moravia and Silesia, and was succeeded by Vladislav of Poland, who had been elected to the throne of Bohemia in 1471. After the fateful fight at Mohacs, the Hapsburgs came to power; in 1612 Matthias, who had ruled Moravia for four years, became king of Bohemia, and Moravia became part of the empire definitely under Hapsburg control. In 1849 Moravia was made a separate prov. of Austria. From 1918 its history belongs to that of Czecho-Slovakia, of which it ceased to be an administrative unit Jan. 1, 1949.

**Moravians** OR MORAVIAN BRETHREN. Protestant sect, also known as the Unitas Fratrum or Bohemian Brethren. Descent is claimed from a division of the Hussites at Prague about 1450, which secured episcopacy from a Waldensian bishop in Austria in 1467, but endured much persecution, especially in Bohemia. In 1722 a few families fled from Moravia to Saxony under the leadership of a carpenter named Christian David, and united with a Lutheran community founded by Count Zinzendorf (1700-60) at Berthelsdorf. The community was originally called Bethel and

later Herrnhut (Watch of the Lord); it definitely separated from Lutheranism in 1727, when the title Moravian Brethren was revived. Elders were now elected and one was consecrated bishop.

Zinzendorf was banished from Saxony in 1736 on a charge of political intrigue, and spent the rest of his life travelling about Europe and establishing branches of the sect. He visited England in 1737, and for a time had influence with the Wesleys. In 1749 he purchased Lindsey Place, Chelsea, and secured a lease of the site of Beaufort House. The stables were turned into a chapel, and the other premises into a residence for the families connected with it. Later used as an orphanage, it was sold in 1770. An Act of parliament (22 Geo. II c. 30) was secured by Zinzendorf to exempt Moravians from military service, and Bishop Wilson of Sodor and Man undertook a general supervision of the community. A chapel was opened in Fetter Lane, London, and several branches, among them the community at Fulneck, near Leeds, were formed.

The sect is said to number about 100,000 adherents; it had in 1948 in the U.K. 42 congregations and preaching stations with 3,043 communicants. Organized in four provinces in Great Britain, N. America, S. America, and Germany, it is famed for its missionary zeal, having sent out over 2,000 missionaries to the heathen. Its theological position is close to that of Evangelical Lutherans.

**Moray.** One of the ancient provinces of Scotland. It included roughly the modern counties of Moray, Nairn, and Banff, and part of Inverness.

**Moray** OR MURRAY, EARL OF. Scottish title borne since 1561 by the family of Stewart. Moray was the name of one of the seven old Scottish earldoms, held early in the 14th century by Sir Thomas Randolph, a kinsman of Robert Bruce. After the death of the 3rd Randolph earl in 1346, it was held by Henry, duke of Lancaster, and then by several members of the Dunbar family. No family held it very long until it came to the Stuarts.

The best known of all earls of Moray was James Stewart (*v.i.*). The title passed to his daughter's husband, James Stuart, and to his descendants in turn until the present day. Alexander, 5th earl (d. 1700), was secretary of state in Scotland before the Revolution of 1689. Francis, 9th earl, was



made a British peer as Baron Stuart in 1796. Archibald, 19th earl (b. Nov. 14, 1894), succeeded his brother in 1943. The eldest son is known as Viscount Doune. *Pron. Murry.*

**Moray, JAMES STEWART, 1ST EARL OF** (c. 1530-70). Scottish noble. An illegitimate son of James V, his mother was Margaret



Earl of Moray,  
Scottish noble

Erskine. He was sent to the university of St. Andrews, and was soon heard of as leading a force that repelled a small French invasion of Fife. He became prominent in Scotland soon after the accession of his half-sister Mary to the throne. A supporter of the reformed teaching, he joined the lords of the congregation in opposing the queen mother, and, having got military aid from England, brought about the treaty of Edinburgh and the departure of the queen's French auxiliaries. For a time after Mary returned from France in 1561, Moray had great influence with her, but a breach soon came, its immediate cause being her marriage with Darnley. Moray was exiled, and was still away when on Mary's abdication in 1567 he was chosen regent. He was responsible for her defeat at Langside, and he ruled the country, on the whole successfully, until shot as he rode through Linlithgow, Jan. 21, 1570, by James Hamilton of Bothwellhaugh. He was buried in S. Giles's, Edinburgh.

Moray married a Keith, daughter of the 1st Earl Marischal, and left two daughters. His character has been fiercely attacked, especially his conduct towards Mary, but there is no reason to believe that he was more treacherous, avaricious, or hypocritical than other nobles of his times. *See Mary Queen of Scots.*

**Moray Firth.** Arm of the North Sea on the N.E. coast of Scotland. It extends inland for nearly 40 m. and has a breadth from Tarbat Ness to Burghead of 16 m., but is sometimes said to embrace the whole extent of water between Duncansby Head, in Caithness, to Kinnairds Head in Aberdeenshire.

**Morayshire.** Maritime co. of Scotland, called Elginshire until 1920. Its area is 476½ sq. m., and it has a coast-line of 33 m. on the Moray Firth. The co. is moun-

tainous in the S., where are the Cromdale Hills, with heights exceeding 2,000 ft., but it becomes less so as the low district along the coast is approached. Among rivers are the Spey, Findhorn, Lossie, and Divie. There are several small lakes; Lochindorb is the largest; Spynie, having been drained, is but a fraction of its former size. Wheat, oats, barley, potatoes are grown; cattle, horses, and pigs are reared; there are valuable fisheries; and the co. has important distilleries. The

chief places are Elgin, the co. town, Lossiemouth, Forres, Rothes, Burghead, Fochabers, and Grantown-on-Spey. The greater part of the Culbin Sands, deposited by a storm c. 1694, has been reclaimed by afforestation. In 1829 the lower parts of the co. were visited by devastating floods. The chief antiquities are ecclesiastical remains at Elgin, Pluscarden, and Kinloss; ruined castles at Spynie, Lochindorb, and New Duffus; and Sweno's Stone at Forres. The co. unites with Nairnshire to form a co. constituency. Pop. (1951) 48,218.

**Morbihan.** Dept. of France, part of the old prov. of Brittany. With an area of 2,738 sq. m. it has an irregular and indented seaboard on the Atlantic and is contiguous with the depts. of Finistère, Côtes-du-Nord, Ille-et-Vilaine, and Loire-Maritime. Except for the Montagnes Noires on its N. boundary, there are few hills; the Landes de Lanvaux form a barren plateau some 30 m. long, running E. and W. The land-locked gulf of Morbihan and Quiberon Bay, with the Vilaine estuary, are features of the coast; Belle-Île and Groix are the chief islands. Towns include Vannes, the capital, Lorient, and Pontivy. Pop. (1954) 520,978.

**Mordant.** Substance used to fix the colour in dyed textiles by the formation of an insoluble coloured compound in the fibres. The process has been used since early times. The most important mordant dye is madder, of which the colouring principle is alizarine. With

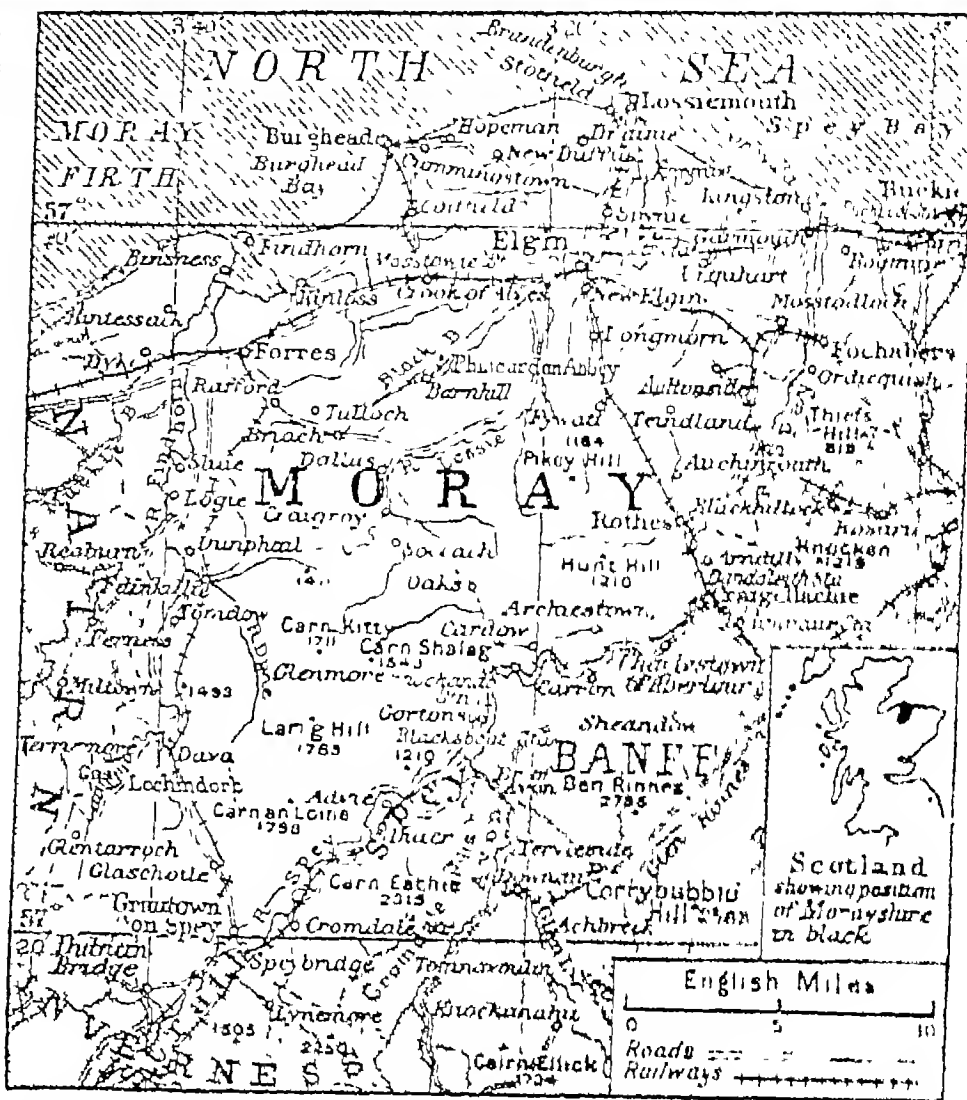
certain metals, notably aluminium (red), iron (violet), and chromium (maroon), insoluble compounds fast to light are formed. The discovery by Nicholson in 1802 that insoluble dyes can be converted to soluble compounds by sulphonation greatly increased the range of colours which could be produced by mordants. In wool dyeing, the usual process is to dye the fibre and develop the insoluble compound by treatment with the mordant. Other basic mordants are aluminium salts, especially the sulphate, alum, and tartarate, while iron, tin, and chromium salts are also used. Basic dyes require acid mordants, chiefly tannic acid and antimony tannate. This class of mordant is used mainly for silk and cotton goods; the cotton is first treated with solution and then dyed. Complex phospho-tungsten-molybdenum compounds as mordants give exceptionally fast dyes.

**Mordecai.** Character in the O.T. book of Esther. Esther was his cousin and adopted daughter. *See Esther; Haman.*

**Morden.** Part of the urban dist. of Merton and Morden (q.v.).

**Morden College.** House near Blackheath, London, built by Wren for Sir John Morden, now a home of rest for aged merchants in distressed circumstances.

**Mordred** or **MODRED.** One of the Knights of the Round Table in the Arthurian legends. In Arthur's absence Mordred usurped the kingdom, and in the last great battle he was slain by Arthur



Morayshire. Map of the maritime county on the east coast of Scotland also called Elginshire

at the very moment that he gave the king his deathblow. In some versions of the legend he was the lover of Queen Guinevere.

**Mordvin.** People of Finnic stock, numbering about 1,000,000; most of them live in the middle Volga region of Russia. They comprise in the S. the dark Moksha, in the N. the blond Erzya. They are husbandmen and woodworkers. Nature-worship survives under a veneer of Christianity.

**Mordvinia.** A.S.S.R. of the R.S.F.S.R. It lies W. of the Sura river, and is drained in the W. by the Moksha, near which are dense forests. Elsewhere the black earth soil is cultivated to produce rye, oats, wheat, hemp, flax, potatoes, and leguminous plants. There are distilleries, flour mills, sawmills, and factories producing starch, vegetable oils, and plant fibres. The capital is Saransk. Area 10,100 sq. m. Pop. (est.) 1,200,000, of whom about a third are of Mordvin stock.

**Møre.** Fylke or co. of Norway, between the Dovrefjeld and the Atlantic. It has a long coastline indented by many fiords, of which the Romsdal, Halse, and Harö are the largest. Most of the area is above 3,000 ft. alt. The chief towns are Kristiansund, Aalesund, and Molde. Fishing is the principal industry. Area 5,812 sq. m. Pop. (1950) 191,438.

**More, SIR ANTHONY** (c. 1512-c. 1576). Dutch portrait painter. Anthonis Mor, also called Antonio



Sir Anthony More  
Dutch painter

Moro, was born at Utrecht, was a pupil of Jan van Scorel, and was influenced by Joost van Cleef. He was admitted to the guild of Utrecht in 1547, and went to Brussels, Rome, and in 1552 to Spain, where he became court painter to Philip II. In England, 1553-54, he painted a portrait of Queen Mary and was knighted, but he returned to the Netherlands and was patronised by Alva. He died at Antwerp. His chief works are Five Members of the Order of S. John of Jerusalem, 1541; Two Canons of Utrecht, 1544; Philip II and Mary of Parma; Sir T. Gresham, in the National Portrait Gallery.

**More, HANNAH** (1745-1833). British author. Born Feb. 2, 1745, at Stapleton, Glos, she was the daughter of a schoolmaster and

a precocious child. Her first considerable work was a pastoral drama, *The Search after Happiness*, 1762. Coming to London in 1774, she became intimate with Garrick, Johnson, Burke, and other literary lights. Garrick produced two of her



Hannah More

tragedies, *Percy*, 1777 and *The Fatal Falsehood*, 1779. She spent her later years in retirement at Cowslip Green, near Bristol, where she wrote *On Female Education*, 1799; and a novel, *Coelebs in Search of a Wife*, 1809. Famous for charitable activities, she died Sept. 7, 1833. Consult *Lives*, H. Thompson, 1838; A. M. B. Meakin, 1911; M. G. Jones, 1952; *Letters*, edited R. B. Johnson, 1925.

**More, SIR THOMAS** (1478-1535). English statesman, author, and saint. He was born in Milk Street, Cheapside, Feb. 7, 1478. His father, John More, became a knight and a justice of the king's bench. His mother was Agnes, daughter of Thomas Graunger. From S. Anthony's grammar school in Threadneedle Street he was admitted, about 1489, into the household of Cardinal Morton. In 1492-94 he was at Oxford, where, a pupil of Grocyn and Linacre, filled with enthusiasm for the new learning, he studied Greek, Latin, French, theology, and music, and began his lifelong friendship with John Colet. In London began his friendship with Erasmus, and in 1501 he was called to the bar.

More lectured on S. Augustine's *De Civitate Dei* at S. Lawrence's, Old Jewry, was for three years reader at Furnival's Inn, and with a view to holy orders placed himself under the direction of the brothers of the Charterhouse. He secretly wore a hair shirt, fasted much, and each day heard Mass, but gave up the idea of the priesthood in 1503. He became M.P. in Jan., 1504, and, continuing his close study of the new learning, was especially influenced by the *Life and Writings of Pico della Mirandola*, a translation of which from the original Latin he published in 1510. He visited Louvain and Paris in 1508, and became bencher of Lincoln's Inn, 1509, and reader, 1511 and 1516. Under-sheriff of London, 1510, while an envoy in Flanders, 1515, he planned his fascinating *Utopia*, 1516.

Regarded with apparent high favour by Henry VIII, he was appointed speaker of the house of commons, 1523, and staunchly defended the privileges of the house against Wolsey, whom he succeeded as lord chancellor in 1529. An ardent reformer of the school of Erasmus, he took alarm at the course which the Reformation was taking in England. Conscience compelled him to resign the chancellorship in 1532, when Henry claimed to be the one supreme head of the Church of England. Though willing to swear political fidelity to the king, he refused in 1534 to take any oath that should impugn the spiritual authority of the pope. Committed to the Tower, April 17, 1534, and indicted for



Tho. More Kt  
After Holbein

high treason in Westminster Hall, July 1, 1535, he was executed on July 6, 1535, the king changing the sentence from hanging to beheading. His body was buried in the church of S. Peter ad Vincula in the Tower, and, according to tradition, reinterred in Chelsea Old Church.

More was twice married, first, in 1505, to Jane Colte, of Newhall, Essex, by whom he had three daughters (Margaret, Elizabeth, and Cicely) and one son (John), and, secondly, about 1511, to Alice Middleton, a widow. His family included also his stepdaughter Alice and an adopted daughter Margaret Giggs. His domestic life is described as his *Utopia* writ large. His house at Chelsea, built 1520, was demolished in 1740. In part of what was once the garden stands the reconstructed Crosby Hall. In addition to the *Utopia*, More is the reputed author of a *Life of Richard III*; he also wrote a tractate on *The Four Last*



Things, and in the Tower his Dialogue of Comfort. See Utopia.

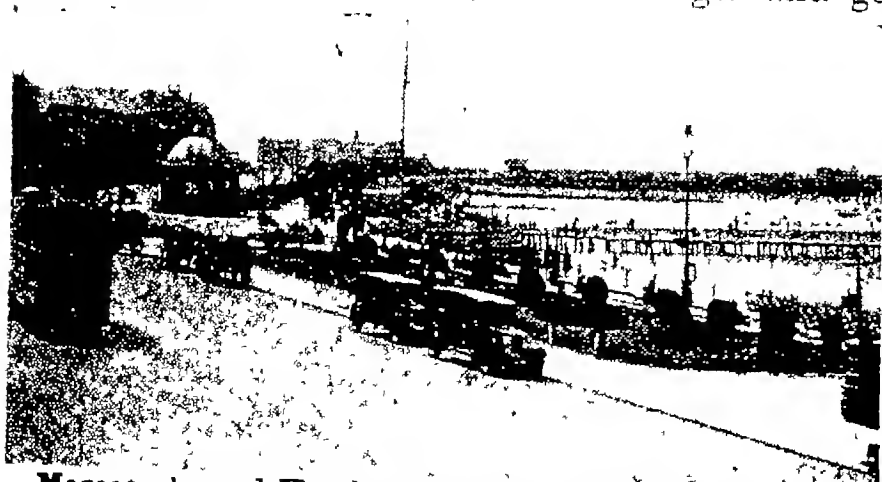
In 1935 More, with John Fisher, was canonised *per via straordinaria*; i.e., he was made a saint in view of his martyrdom, although he had not performed the two miracles generally held necessary for canonisation. The gesture marked the pope's interest in England and his pleasure at the large number of English pilgrims who had visited Rome during the Holy Year. The ceremony was performed on May 19, 1935, in the presence of some of More's descendants and 8,000 British pilgrims led by the R.C. archbishop of Westminster. More was the first British saint since the Reformation. His festival is July 6.

**Bibliography.** Lives, W. H. Hutton, 2nd ed., 1900; C. Hollis, 1934; R. W. Chambers, 1935; J. R. O'Connell, 1935; D. Sargent, 1936; A. Cecil, 1937. The Utopia, with Roper's Life of More and some letters, W. G. Sampson, 1914.

**Morea**, THE (perhaps from Gr. *moron*, mulberry, from its resemblance in shape to a mulberry leaf). Medieval name for the part of Greece anciently called the Peloponnesus. Since the liberation of Greece from Turkish rule, the name Peloponnesus has come into use for this area.

**Moréas**, JEAN (1856-1910). Greek-born French poet. Born at Athens, April 15, 1856, he became a leader of the Symbolist school of poetry in France. His early works included *Les Cantilènes*, 1886, and *Le Pèlerin Passionné*, 1891. Later he adopted a classic severity of style in such volumes as *Poésies*, 1898; *Contes de la Vieille France*, 1903; and in his verse-drama, *Iphigénie à Aulis*, 1905, strongly reminiscent of Euripides. He died March 31, 1910.

**Moreau**, GUSTAVE (1826-98). French painter. Born at Paris, April 6, 1826, he studied at the École des Beaux-Arts, and exhibited at the Salon, 1852. The *Athenians* and the *Minotaur* was exhibited, 1855, and *Oedipus* and the *Sphinx* at the Salon, 1864.



Morecambe and Heysham. Part of the promenade of this popular Lancashire holiday resort

Other important works are: *Orpheus*, *Jason*, *Golgotha* (all in the Luxembourg), *Diomed*, 1866, *Salomé*, and *Helène*, 1880. He died April 18, 1898.

**Moreau**, JEAN VICTOR MARIE (1763-1813). French soldier. Born Aug. 11, 1763, at Morlaix, the son



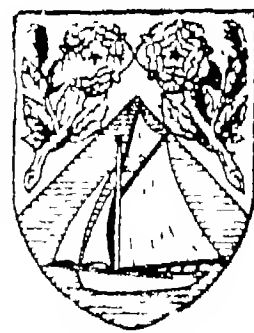
J. V. M. Moreau, French soldier

of a lawyer, he was educated for the law at Rennes, where he made himself notorious by his leadership of the students in their disorders. In 1790 he joined the revolutionary army, and, coming early to the front, was, in 1793, made a general. He commanded a division in Flanders, after which he led an army into Germany. After some successes he was compelled to retreat, this able performance, however, adding to his reputation. In 1797, suspected as a traitor, he lost his command but in 1799 he was given a high position with the army in Italy, where he led another masterly retreat.

In 1800 Moreau assisted Bonaparte to overthrow the Directory. He then led an army against the Austrians, ending a successful campaign with the victory at Hohenlinden (*q.v.*), Dec. 3. Partly because of his republican views, he fell under his master's displeasure. He was tried and, although the charge was not proved, was banished for complicity in a plot against Napoleon, and spent the next few years in America, where he married a Creole. In 1812 he joined the Allied service, and was mortally wounded at the battle of Dresden, Aug. 27, 1813. He died on September 2.

**Morecambe and Heysham**. Seaport, holiday resort, and bor. of Lancashire. It stands on Morecambe Bay, 5 m. from Lancaster. Heysham harbour, completed 1904 and covering 300 acres, is a British Rlys. (formerly L.M.S. Rly.) passenger and goods seaport to and from N. Ireland, with additional services to the Isle of Man. St. Peter's church in the old village of Heysham is mainly Norman. Morecambe, to the immediate N., is a large holiday resort with a great range of popular enter-

tainments. It has been called the "gateway to the Lakes." The fine promenade gives magnificent views across the bay of the mountains in the Lake District, but except at high tide there is little sea. During the Second Great War there was a R.A.F. training centre here. Pop. (1951) 37,000.



Morecambe and Heysham arms

**Morecambe Bay**. Extensive inlet on the coast of Lancashire and Westmorland, England. It extends 17 m. inland to the mouth of the river Kent, and measures 10 m. in breadth from the S.E. point of Walney Island to Fleetwood. Besides the Kent, the Lune, Wyre, and several smaller rivers empty into Morecambe Bay. At high tide a bore runs up the river estuaries; at low water much of the area is bare sand, the rivers forming narrow impermanent channels.

**Moree**. Municipality of New South Wales, Australia. On the Gwydir river, it is 413 m. by rly. N.N.W. of Sydney on a branch with a railhead at Mungindi on the Queensland border. It has medicinal baths and a state experimental farm. Pop. 4,100.

**Morel** (*Morchella esculenta*). Edible fungus of the family Ascomycetes. A native of temperate

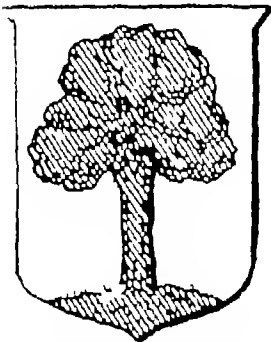


Morel. Specimens of the edible fungus

regions in both hemispheres, it has a short, white, tapering stem, and a swollen head, whose surface is broken into a network of ribs enclosing deep polygonal pits, varying in colour from yellowish, through brown, to olive. Both stem and head are hollow. Morels have been considered a delicacy since classical times, and are generally dried and used for flavouring. They seem to prefer disturbed ground and burnt areas. There are several allied species, equally good as food, one of them, Smith's Morel (*M. crassipes*, var. *Smithiana*) attaining a height of a foot, with a diameter of 7 ins. See Mushroom.

**Morelia.** City of Mexico. The capital of Michoacan state, it stands in a mountainous district, 6,400 ft. alt., 230 m. W. of Mexico City by rly. Its most prominent buildings are the handsome cathedral and the state-house. Chief among its educational establishments is San Nicolas de Hidalgo college, the oldest institution of the kind in Mexico. Cotton and woolen goods, sugar, cigars, cheese, and pulque are manufactured. Founded as Valladolid in 1541, Morelia became the state capital in 1582, and received its present name in 1828 in honour of Morelos, a revolutionary. Pop. (1950) 63,245.

**Morella.** Town of Spain, in the prov. of Castellón. Perched high up in the mts., 36 m. S.W. of Tortosa, it is built in the form of an amphitheatre, and girdled by Moorish walls and towers. It was a medieval fortress protecting Valencia against Aragon, and has a Gothic church,



Morella arms

founded in 1317. Blankets and sashes are made. Morella was the chief stronghold of the Carlist Cabrera, who twice defeated the forces of Queen Christina here in 1838; it was taken by Espartero in 1840. Pop. (1950) 4,786.

**Morelos.** Small inland state of Mexico. It is situated immediately S. of the Federal dist. which surrounds the city of Mexico. In the mountainous N. the climate is cold; the S. occupies part of the slope of the Mexican plateau, and has a hot climate. The first sugarcane plantations were established here by Cortes, and the sugar industry is still predominant; rice, coffee, cereals, and fruits are grown. Silver, copper, and zinc are mined. Cuernavaca is the capital. Area 1,916 sq. m. Population (1950) 272,842.

**More Pork.** Popular name for a species of nightjar, *Podargus cuvieri*. It occurs in Australia and Tasmania, and is so called from the sound of its cry. It is also called frogmouth, in allusion to its large mouth. It is dull grey in colour.

**Moresnet.** Village and dist. of Belgium. It lies on the E. frontier of the prov. of Liège, 4 m. S.W. of Aix-la-Chapelle (Aachen), and contains rich zinc deposits, under the Vieille Montagne, or Altenberg, worked by a Belgian company. During 1816-1919 Moresnet was a neutral state, until 1841 under joint Belgian and Prussian admini-

stration, thereafter under the government of its own burgomaster and council, the inhabitants making choice of Belgian or German legal rights and military service. The village of Neutral-Moresnet, or Kalmis, was the centre of the state. In 1919 Moresnet was incorporated with Belgium. Pop 2,850. Pron Mor-ay-nay.

**Moreton Bay.** Harbour of Queensland, Australia. It measures 49 m. by 17 m., and is enclosed by the narrow sandy islands of Moreton and Stradbroke. Brisbane River enters it, Brisbane being 15 m. S.W. of the bay. The neighbouring locality developed into Queensland.

**Moreton Bay Chestnut** (*Castanospermum australe*). Tall evergreen tree of the family Leguminosae, and a native of Australia. It has a smooth bark, and the large leaves are broken into two rows of pointed oblong leaflets. The flowers are at first canary-coloured, becoming a rich scarlet, and hang in loose sprays. The large, oblong, woody pods contain



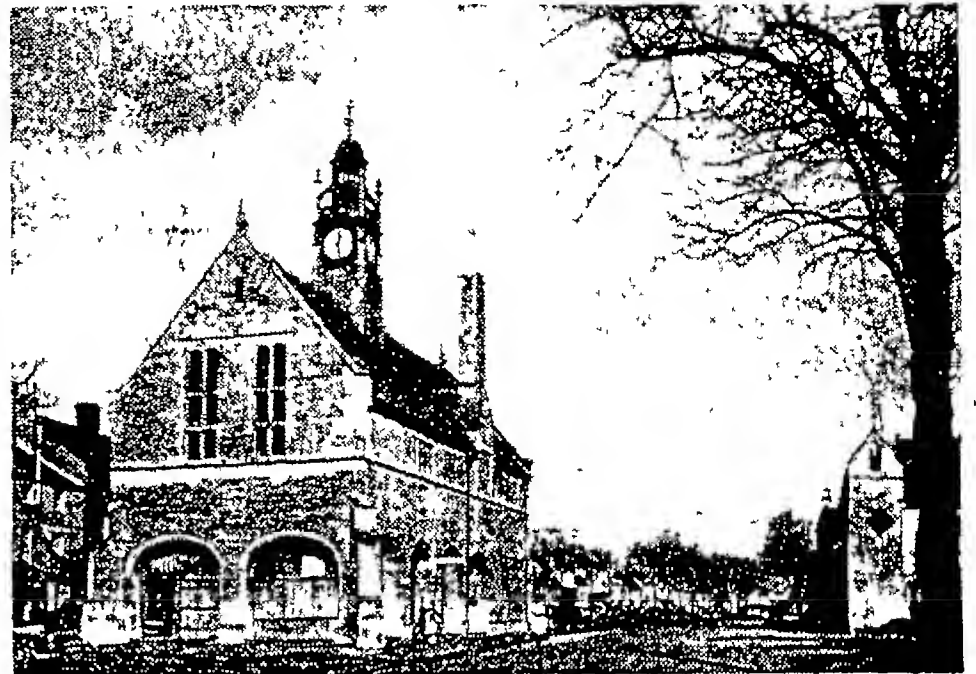
Moreton Bay Chestnut. Foliage, flower, and fruit of the Australian evergreen

beans, which are said to taste, as they look, like chestnuts, hence the name. The heart-wood is dark-coloured, and is valued by cabinet-makers and turners; but it shrinks considerably in drying.

**Moretonhampstead.** Market town of Devon, England, on the edge of Dartmoor, 11 m. S.W. of Exeter, with a rly. station. A row of almshouses is notable for its stone façade fronting the main street. The 15th century church has a turreted tower with a 13th century arch looking into the nave.

Near the town is much beautiful scenery, notably along the Exeter road. Pop. (1951) parish, 1,617.

**Moreton-in-the-Marsh.** Market town of Gloucestershire, England, 16 m. N.E. of Cheltenham. It has a broad main street and fine



Moreton-in-the-Marsh, Gloucestershire. The market hall, left, and the old tollhouse, right

17th century houses. The White Hart inn is associated with Charles I, and in the cottage hospital are preserved the chair, cushion, and footstool used by him at his trial. Moreton is a rly. junction. Four Shires Stone, 1½ m. outside the town, marks the meeting place of Glos, Oxon, Warwickshire, and Worcs. Pop. (1951) parish, 1,798.

**Moretto, IL** (1498-1554) Italian painter. Born at Rovato, near Brescia, his real name was Alessandro Bonvicino, and he was a pupil of Ferramola. Influenced by Romanino, Titian, and Raphael, he painted religious pictures and some portraits. In 1521 he was engaged on frescoes with Romanino, in S. Giovanni, Brescia. His other works include Christ with His Cross, at Bergamo, 1518; The Ascension, 1526; Martinengo Cesaresco, 1526, in the National Gallery, London; Madonna with S. Cecily, 1540; Christ in the House of Levi, 1542. The master of Moroni, he was noted for technique in chiaroscuro. He died Dec. 22, 1554. Il Moretto means the blackamoor.

**Morgan, CHARLES LANGBRIDGE** (1894-1958). British novelist and essayist. Born Jan. 22, 1894, he entered the Royal Navy as a cadet, served in the Atlantic and on the China station, and in the First Great War; then was at Brasenose College, Oxford. He



Charles Morgan, British novelist



joined *The Times* in 1921, and was its dramatic critic 1926-39. His first publication was *The Gun-room*, 1919, and he made his name as a novelist with *Portrait in a Mirror*, 1929 (Femina Vie Heureuse prize); *The Fountain*, 1932 (Hawthornden prize); *Sparken-broke*, 1936; *The Voyage*, 1940 (James Tait Black prize). A series of brilliant essays published as *Reflections in a Mirror* was translated into 15 languages.

Of his plays, *The Flashing Stream* was produced in London 1938; *The River Line* (from his novel, 1949, of the same title) at Edinburgh and London, 1952; *The Burning Glass* in London 1953. He died Feb. 6, 1958.

**Morgan, Sir Frederick Edgworth** (b. 1894). British soldier and administrator. Born at Pad-



Sir Frederick Morgan,  
British soldier

dock Wood, Kent, Feb. 5, 1894, he was educated at Clifton College and the Royal Military Academy, Woolwich. Commissioned in the Royal Artillery 1913, he served in France in the First Great War. Brigadier 1939. he commanded the support group of the 1st armoured div. in France. 1940. After Dunkirk he held various commands in the U.K. until in Aug., 1943, now Lt. gen., he was made chief of staff to the supreme Allied commander (not yet appointed), in which capacity he was responsible for preparing and coordinating plans for the intended Allied invasion of Europe: his own account of this work appeared in *Overture to Overlord*, 1950. Morgan was deputy chief of staff to Eisenhower, supreme commander, A.E.F., 1944-1945; chief of U.N.R.R.A. in Germany 1945-46; and, retiring from the army in 1946, was controller of atomic energy at the ministry of Supply 1951-54, controller of atomic weapons 1954-56. He was made K.C.B. in 1944.

**Morgan, Sir Henry** (c. 1635-88). Welsh buccaneer. He belonged to a Glamorganshire family, and, according to tradition, was kidnapped as a youth in Bristol and sold in Barbados. Later he got to Jamaica, joined the buccaneers, and rapidly rose to leadership. He took part in daring exploits against the Spaniards in Panama, Cuba, and elsewhere. In 1672 he was sent back

to England in disgrace, but won the favour of Charles II, was knighted, and returned to Jamaica



Sir Henry Morgan,  
Welsh buccaneer

as lieutenant-governor of Jamaica, dying there in Aug., 1688. *Consult* Buccaneers of America, A. O. Exquemeling, 1684, repr. 1891; *History of Buccaneers of America*, J. Burney new ed. 1907; *Lives*, W. A. Roberts, 1933; E. A. Cruikshank, 1935; R. Forbes, 1948.

**Morgan, John Pierpont** (1837-1913). American financier. Born at Hartford, Conn., April 17, 1837, he was educated at Boston and Gottingen. Inheriting a large fortune from his father, he joined the banking firm of Duncan Sherman in 1857, and three years later became the American agent of George Peabody and co., of London. During 1864-71 he was a partner in Dabney, Morgan and co., and then joined Drexel, Morgan—later known as J. P. Morgan and co., of New York—which henceforth was the leading financial house in America.

Under him it carried through enormous transactions, and in the U.S.A. financed great railway and shipping schemes. One of the most successful industrial enterprises created by Morgan was the U.S. Steel Corporation, or steel trust, with a capital of £220,000,000, and he was at the head of the Atlantic shipping combine. The firm restored financial stability in the U.S.A. after the panic of 1893. Morgan gave princely donations to Harvard, Yale, other educational institutions, hospitals, churches, etc. In his day he was the world's greatest art collector, and owned priceless pictures, china, and books. Keenly interested in yachting and other sports, he frequently visited Europe, and had a house in London. He died in Rome, March 31, 1913. (*Consult* Life, F. L. Allen, 1949.)

Morgan was succeeded in his business by his son, also John Pierpont (1867-1943). Born Sept. 7, 1867, he graduated from Har-



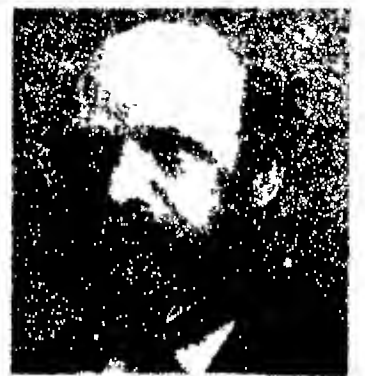
J. P. Morgan,  
American financier  
Russell

vard in 1889 and spent eight years in the London house now known as Morgan, Grenfell and co. Under his direction, J. P. Morgan and co. acted as American agents for the British government during the First Great War, and after 1918 issued loans to various countries totalling \$1,700,000,000. Morgan presented his house in Princes Gate, London, for the American Embassy in 1920, and his father's library for a research institution in 1923. The firm dropped its security underwriting in 1933 and concentrated on private deposit banking; the investment business was turned over to a new firm headed by Morgan's son Henry. In 1940 the "House of Morgan" was recreated as an incorporated bank. "J. P. junior" died in Florida, March 13, 1943.

**Morgan, Lewis Henry** (1818-81). American anthropologist. Born at Aurora, N.Y., Nov. 21, 1818, he graduated at Union College, 1840; practised law at Rochester, N.Y.; and entered the state senate, 1868. His *League of the Iroquois*, 1851, inaugurated the systematic study of tribal life. In *Ancient Society*, 1877, he classified human culture into lower, middle, and upper savagery; lower, middle and upper barbarism; and civilization. *Houses and House-life of the American Aborigines*, 1881, is a standard work on the evolution of primitive dwellings. Died at Rochester, Dec. 17, 1881.

**Morgan, Lady Sydney** (1783-1859). Irish novelist. She was born in Dublin, the daughter of an actor, Robert Owenson. She first became known by a successful first novel, *St. Clair*, 1804, and there followed some 20 books, of which the best-known are *The Wild Irish Girl*, 1806, and *O'Donnell*, 1814. In 1812 she married Thomas, afterwards Sir Thomas, Morgan, a doctor. She died in London, April 14, 1859.

**Morgan, Thomas** (d. 1743). English writer. About 1700 he became an independent minister at



L. H. Morgan,  
American anthropologist



Lady Sydney Morgan,  
Irish novelist

Burton in Somerset, his native county, and afterwards at Frome and Marlborough, but his advanced views led, after a few years, to the loss of his office. He later made a reputation as a religious controversialist, his opinions being akin to those of the Deists. He wrote *The Moral Philosopher*, 1736, and *The Philosophical Principles of Medicine*, a subject he had studied. He contributed many tracts on the Trinitarian controversy. Morgan died Jan. 14, 1743.

**Morgan, THOMAS HUNT** (1866-1945). American biologist. Born in 1866, he was educated at Kentucky and Johns Hopkins universities. Professor of experimental zoology, Columbia university, 1904-1928, he was appointed director of the William Kerckhoff laboratories of biological sciences, California institute of technology, in 1928, where his work in biology and physiology earned him the Nobel prize in 1933. He was president of the American association for the advancement of science in 1929 and president of the national academy of sciences in 1927 and 1931. He was awarded the Copley medal of the Royal Society, 1939. He died Dec. 4, 1945. His principal publications included: *Evolution and Adaptation*, 1903; *Experimental Zoology*, 1907; *Heredity and Sex*, 1913; *Mechanism of Mendelian Heredity*, 1915; *Critique of the Theory of Evolution*, 1916; *The Physical Basis of Heredity*, 1919; *The Theory of the Gene*, 1926; *Experimental Embryology*, 1927; *The Scientific Basis of Evolution*, 1932; *Embryology and Genetics*, 1934.

**Morganatic Marriage.** Union of a member of a royal or princely family with one of lower rank. The marriage, which was usual in Europe, especially among Teutonic peoples, is binding and the children are legitimate; but they are debarred from succeeding to their father's titles and inheritance, and occupy a position assigned to them by the morganatic contract. These unions are sometimes called left-handed marriages, because the left hand was given in the marriage ceremony instead of the right. The word comes from the German *morgen*, referring to the *morgengabe*, or morning gift formerly made by the husband to his wife on the morning after the marriage night. In Great Britain morganatic marriage, as such, is not recognized, but the Royal Marriage Act requires the consent of the sovereign to the marriage of persons of the blood royal.

**Morgan le Fay, MORGAIN OR MORGUE.** One of the three half-sisters of King Arthur in the Arthurian legends. She is otherwise represented as a fay or fairy, with the power of assuming various forms. Her part in the Arthurian stories varies greatly in the different versions. In Malory's *Morte d'Arthur* she is said to be married to King Uriens of the land of Gore, and to have been one of the three queens who bore the stricken Arthur to the isle of Avalon.

In Italian legends her name, *Fata Morgana* (*q.v.*), is given to a mirage in the Straits of Messina. Consult *British Fairy Origins*, L. Spence, 1946.

**Morgantown.** City of Monongalia co., W. Virginia, U.S.A. It stands on the Monongahela R., which is navigable here, and on two lines of rly., and lies in a rich and active coal area. Until 1929 the city was important for glass production, powered by natural gas, but only three glass plants and a shirt factory remained after the economic depression of that year. The university of W. Virginia, founded in 1867, which in 1947 had 2,700 students, is a well-known centre of education. The university's school of mines conducts important research in coal production and oil and gas engineering. The university campus covers 66 acres on which a stadium which seats 40,000 was built in 1924. The town was founded about 1770, given a corporation 1785, made a city 1905. Pop. (1950) 25,525.

**Morgarten.** Mountain of Switzerland. It stands in the centre of Zug, at the S.E. end of the Lake Aegeri, near Settel station on the rly. from Zürich to Schwyz. In 1315 trouble arose between the men of Schwyz and the Hapsburgs, the lords of the country. Leopold of Hapsburg collected an army of 15,000 men at Zug and marched towards Schwyz. To reach the town, his men pressed up the lower slopes of Morgarten, where about 1,500 Swiss were waiting for them, Nov. 15, 1315. Boulders and trunks of trees were rolled upon them as they advanced, and in the end they were driven down to the lake. This was the beginning of the struggle that ended in the freedom of the Swiss. A monument marks the site of the battle. See Switzerland.

**Morgat.** Village of France, in the dept. of Finistère. It lies near Crozon on the bay of Douarnenez, 5 m. N. of the Cap de la Chèvre, and is noted as a bathing resort. See Grotto.

**Morgen** (Ger., morning). Word used in Scandinavia, Prussia, Holland, and especially in S. Africa as a measure of land. In S. Africa a morgen is about two acres, in Prussia and Scandinavia it is less than one. It is supposed that the word originated in the amount of land ploughed during a morning.

**Morgenthau, HENRY** (1856-1946). American financier. Born at Mannheim, Germany, of Jewish parents, April 26, 1856, he went to the U.S.A. in 1865. He was ambassador to Turkey, 1913-16, but was better known as a leading financier. He was president of the Central Realty Bond and Trust co., 1899-1905, and of Henry Morgenthau co., 1905-13. His publications include *Secrets of the Bosphorus*, 1919; *An International Drama*, 1930; and a volume of reminiscences, *All in a Lifetime*, 1923. He died Nov. 25, 1946.

**Morgenthau, HENRY, JR.** (b. 1891), American politician. Born May 11, 1891, son of Henry Morgenthau (*v.s.*) he was educated at Cornell university. Editor of the *American Agriculturist*, 1922-34, he was conservation commissioner of N.Y. State, 1931, and government farm credit administrator, 1933. Roosevelt made him under-secretary of the treasury, 1933, and he became secretary the following year, resigning in 1945 to return to his private business. His book, *Germany is Our Problem*, was published in 1945. *Pron.* Morgan-thaw.

**Morghen, RAPHAEL SANZIO** (1758-1833). An Italian engraver. Born at Florence, June 19, 1758, he was instructed by his father and uncle, who were engravers, and sent to Rome as a pupil of Volpato. He engraved Raphael's figures of Poetry and Theology in the Vatican in 1781. In 1787 he produced Guido's *Aurora*. He also engraved *The Last Supper* after Leonardo, *The Transfiguration* and *The Madonna della Sedia* after Raphael, and Van Dyck's *Duke of Moncada*. Morghen died at Florence, April 8, 1833.

**Morgue, THE.** Former building in Paris. It was situated behind Notre-Dame, and in it the corpses of unknown persons, mainly those recovered from the Seine, were exposed here on marble slabs,



R. S. Morghen,  
Italian engraver  
After P. Caronni



pending identification. The building, which was erected in 1864, replaced an edifice with the same name and function built on the Quai du Marché-Neuf at the time of the Revolution. In 1924 the Morgue was pulled down and a new mortuary erected on the riverside at the Quai de la Rapin. The site of the original Morgue is now a public garden.

**Morhange** OR MÖRCHINGEN. Town of Lorraine, France, in Moselle dept., about 20 m. S.E. of Metz. The battle of Morhange in the First Great War was fought between French and German forces, Aug. 14-23, 1914. The French offensive resulted in initial gains, but the French were checked on coming up against the German prepared positions and forced to retire behind the Meurthe, suffering heavy casualties.

**Moriche Palm** (*Mauritia flexuosa*). Large tree of the family Palmae, native of S. America.



Moriche Palm. South American palm tree; left, inset, a single flower spray

The enormous leaves are fan-shaped, forming a huge crown to the lofty trunk. The fruits have a tessellated appearance due to a covering of hard, shining scales. From the young fruits a beverage is prepared, and the sap, fermented, becomes palm wine. A sago-like food is yielded by the soft inner part of the stem; and the young leaves torn into strips are twisted into string and cordage.

**Moricz**, ZSIGMOND (b. 1879). Hungarian novelist. Born June 30, 1879, at Csecs, he became a journalist. He was editor of the literary periodical Nyugat (The

West), wrote many powerful novels, especially about Hungarian peasant life, some of which were translated into other languages, and a number of successful plays, among which *Sári Biro*, 1910, stands out. He was considered a leader of naturalism in Hungarian literature.

**Morier**, JAMES JUSTINIAN (c. 1780-1849). British diplomatist and writer. Member of a family of diplomatists, he was born at Smyrna (Izmir), held an appointment at the Persian court, and wrote books on his travels in Persia, Armenia, and Asia Minor, and a delightful Oriental romance, *The Adventures of Hajji Baba of Ispahan*, 1824 (new ed. 1949). He died at Brighton, March 19, 1849.



J. J. Morier, British diplomatist

**Mörike**, EDUARD (1804-75). German poet. He was born at Ludwigsburg, Württemberg, Sept. 8, 1804, and had already published a novel, *Maler Nolten*, 1832, when in 1834 he became pastor at Cleversulzbach, Württemberg. In 1838 his poems won him fame. In 1843, owing to ill-health, he resigned his pastorate, but he was professor of German literature at Stuttgart, 1851-66. He died June 4, 1875.

**Morillo**, PABLO (1778-1837). Spanish soldier. Born May 5, 1778, he fought against Napoleon, and in 1815 was sent with an army to S. America to reduce the rebels to obedience. In Colombia and Venezuela he acquired a sinister reputation by his cruelties. He secured possession of Cartagena and Bogotá, but afterwards was defeated by Bolivar and returned to Spain in 1820. In 1823 he submitted to the French and was exiled, but in 1832 he was again in Spain, fighting against the Carlists. He died July 27, 1837.

**Morin**. Name of two small rivers in France. The Grand Morin joins the Marne near Esbly, and the Petit Morin, rising in the marshes of St. Gond, N. of Fère-Champenoise, joins the Marne at La Ferté-sous-Jouarre. Both were prominent in the First Great War. See Marne, Battles of the.

**Morina**. Genus of perennial herbs of the family Di-saceae, natives of Asia. They have long, slender, spiny-toothed and opposite leaves, and tubular flowers in whorls above the upper leaves. In the most frequently cultivated

species, *M. longifolia*, they are at first white, then pink, later crimson. In *M. coulteriana* they are pale yellow.

**Morioka**. Town of Japan, in Honshu. An island town, on the N.E. rly., 330 m. N. by E. of Tokyo, it is the prefectural capital of Iwate on the banks of the Kitakami. It contained in feudal times the seat of the Nambu family: Nambu-fuji, or Iwate-san, lying 22 m. to the N.W. It is the centre of an agricultural dist. noted for horse rearing. Textiles and hardware are the chief industrial products. Pop. 69,127.

**Moriscos**. Name given to the Moors in Spain after their conquest in 1492. After various measures of persecution and restriction of rights, notably during 1500-25 and under Philip II in 1568, they were finally expelled from Spain under Philip III in 1609-10, with the exception of those who had become Christians, and of the children under four, who were retained and baptized. See Moors; Spain: History.

**Morison**, JAMES AUGUSTUS COTTER (1832-88). British author. Born in London, April 20, 1832, he passed his childhood in France. He was educated at Highgate school and Lincoln College, Oxford, and became associated with the Positivists. His book, *The Service of Man*, 1887, is an argument for Positivism; he also produced a fine *Life of St. Bernard*, 1863. He died Feb. 26, 1888.

**Morison**, ROBERT (1620-83). Scottish botanist. Born at Aberdeen, he was educated at the university there, and was intended for the ministry, but abandoned that career to serve against the Covenanters. Dangerously wounded at the battle of the Brigg of Dee, he fled to Paris, studied botany and zoology, and took a medical degree at Angers. About 1650 he received an appointment in the



Morina. Foliage and flower whorls of *M. longifolia*. Inset, single flower

household of the duke of Orleans as one of his physicians and helped in the care of his gardens at Blois. Morison crossed to England with Charles II, who made him his senior physician and botanist. Professor of botany at Oxford from 1669, he died Nov. 10, 1683. His work in identifying genera and species made him one of the greatest pioneers in classification.

**Morisot**, BERTHE MARIE PAULINE (1841-95). French painter. Born at Bourges, Jan. 14, 1841, she studied under Oudinot, with whom she painted landscape. Later she met Manet, painted figure subjects under his direction, and married his brother Eugène in 1874. An exhibitor at the Salon from 1864, she joined the Impressionists and showed work at their first exhibition in 1874. The finest example of her art, *A Young Girl at a Ball*, is in the Luxembourg museum in Paris. She died March 2, 1895.

**Moriston**. Alternative spelling of Morrision (*q.v.*), river and glen of Scotland.

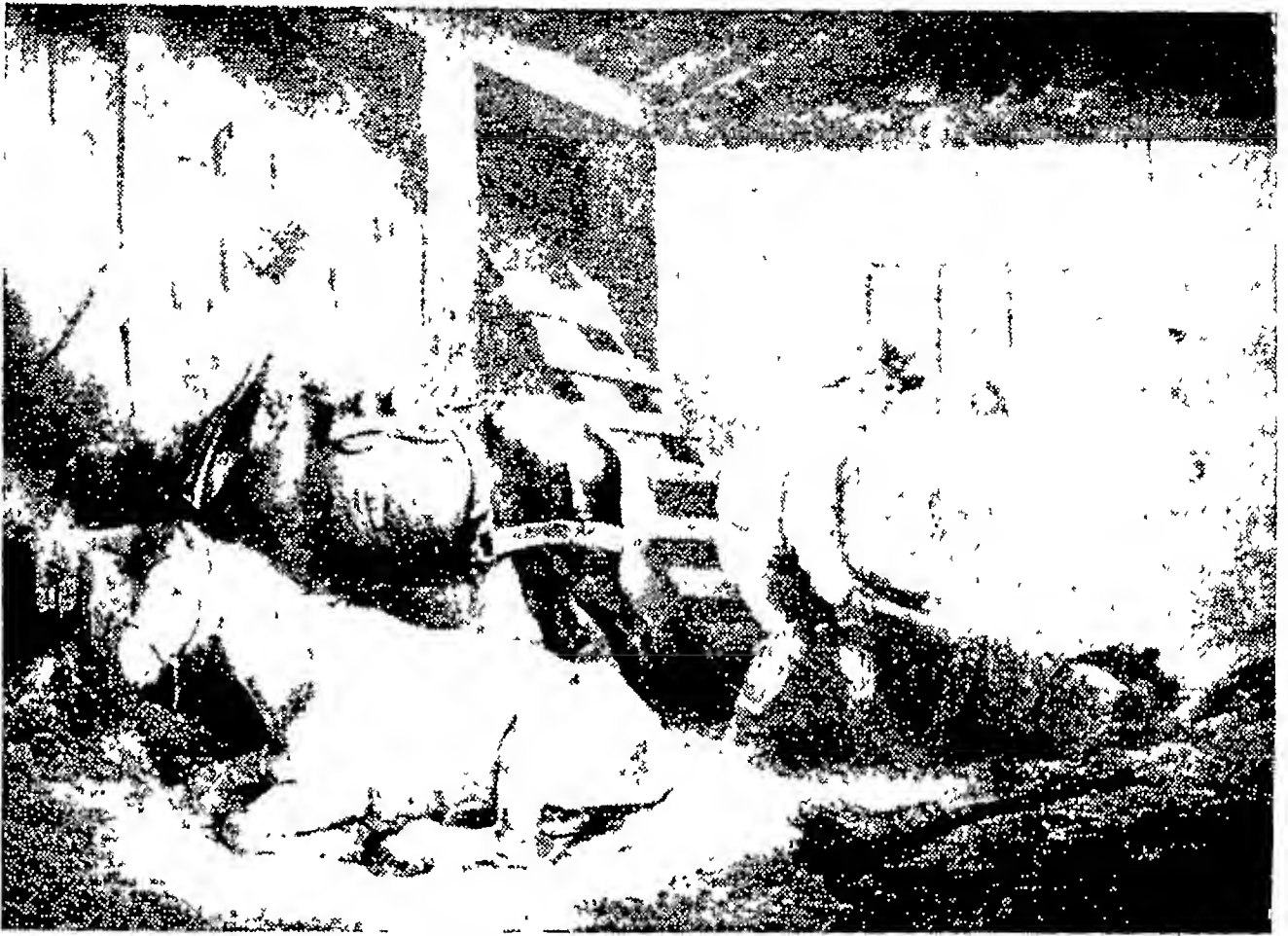
**Morlaix**. Town of France, in the dept. of Finistère. On the river Morlaix, 37 m. by rly. E.N.E. of Brest, and 4 m. from the sea, the town trades in grain, vegetables, dairy produce, etc., and has a tobacco factory. A branch rly. runs to Roscoff. The 16th-century church of S. Melaine has interesting carvings. Pop. (1954) 15,037.

**Morland**, GEORGE (1763-1804). British painter. Born in London, June 26, 1763, he was instructed by his father, H. R. Morland, and influenced by George Stubbs, the animal painter. He exhibited at the R.A. from 1778 to 1804, and at the Society of Artists, 1777-



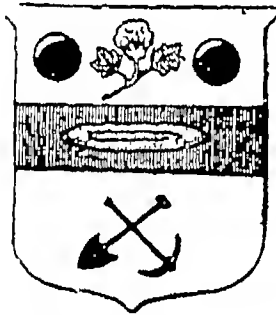
George Morland,  
British painter

82, almost wholly subjects of a domestic nature and country scenes with animals. Morland married in 1786 the sister of William Ward, whose engravings helped to popularise his work. He painted with facility, but loose living involved him in constant financial difficulties, and he died in a sponging-house in London, Oct. 27, 1804. His masterpiece, *The Inside of a Stable*, 1791, is in the National Gallery, London. Of his *Dancing Dogs* 500 engraved copies were sold in a few weeks. See Engraving, illus.; consult *Life and Works*, G. C. Williamson, 1904.



George Morland. *Horses in a Stable*: a characteristic example of the artist's treatment of animal life, now in the Victoria and Albert Museum

**Morley**. Borough of the W. Riding of Yorkshire, England, 5 m. S.W. of Leeds. Its staple trade is the manufacture of woollen goods; there are also glass and leather works, and stone is quarried. Mentioned in Domesday, Morley was a village until the industrial developments of the 19th century. It became a corporate town in 1885. With the bor. of Batley, it forms the bor. constituency of Batley and Morley. The 1st earl of Oxford and Asquith was born here. Near is the ruin of Howley Hall, long the seat of the Saviles. The site of the battle of Atherton Moor, 1643, is kept as an open space. Market, Fri. and Sat. Pop. (1951) 39,787.



Morley arms

**Morley of Blackburn**, JOHN MORLEY, VISCOUNT (1838-1923). British author and statesman. The son of a surgeon, he was born at Blackburn, Dec. 24, 1838, and educated at Cheltenham and Lincoln College, Oxford. While studying for the bar he edited the *Literary Gazette*, and in 1867 published his first book, a study of Burke. That year he became editor of the *Fortnightly Review* (until 1882), and during 1869-70 was in charge also of the *Morning Star*. Fine

studies of Voltaire, Rousseau, and Diderot and the *Encyclopédistes* appeared in the 1870s, and were included in his *Critical Miscellanies*. During 1880-83 he was editor of the *Pall Mall Gazette*. Morley edited Macmillan's series on English men of letters and English statesmen, contributing volumes on Burke, Walpole, and Cromwell.

He entered politics as Liberal M.P. for Newcastle-on-Tyne (1883-95), which involved severing his connexion with journalism, though not with publishing. Within three years he was Gladstone's chief secretary for Ireland, a post he held again 1892-95. From 1896 to 1908, when he was created Viscount Morley of Blackburn, he sat for Montrose burghs; he was secretary for India, 1905-10, carrying through the Morley-Minto reforms, and then lord president of the council, resigning in 1914.

When the Order of Merit was instituted in 1902, Morley was made a member, and from 1908 he was chancellor of the university of Manchester. From 1899 he was engaged on his monumental *Life of Gladstone*, published 1903. In 1891 he had become a bencher of Lincoln's Inn, and in 1894 a trustee of the British Museum. In 1902 Carnegie presented to him the library bought from Lord Acton's executors, and this Morley handed over to Acton's university, Cambridge. *Recollections*, published 1917, gave confidential glimpses of politics, and its literary grace charmed readers. Morley died without an heir, Sept. 23, 1923. Consult *Collected Works*, 15 vols., 1920; *Life*, J. H. Morgan, 1924.



Lord Morley,  
British statesman  
Haines



**Morley, CHRISTOPHER DARLINGTON** (1890-1957). American writer. Of British descent, he was born at Haverford, Pa., May 5, 1890. He went to the university there and to New College, Oxford. He was with a publishing firm 1913-17; on the New York Evening Post, 1920-24; and a regular contributor to the Saturday Review of Literature, 1924-39. He made new friends in Great Britain during the Second Great War and after by his part in the international radio feature, Transatlantic Quiz. As a novelist he began with *The Eighth Sin*, 1912, but made his name with *Thunder on the Left*, 1925, a finely-written fantasy, later dramatised. Essays and Poems followed, both in 1927, and *John Mistletoe*, 1931; *The Trojan Horse*, 1937; *Kitty Foyle*, 1939; *The Middle Kingdom* (poems), 1944; *The Old Mandarin*, 1947; *The Man Who Made Friends with Himself*, 1949. He died at Long Island, N.Y., March 28, 1957.



Christopher Morley  
American writer

**Morley, HENRY** (1822-94). British man of letters. Born in London Sept. 15, 1822, the son of a doctor, he was educated at Neuwied, Germany, and King's College, London. He became associated with Household Words, All the Year Round, and The Examiner, of which he was editor



Henry Morley,  
British author

1859-64. In 1865 he became professor of literature at University College, and in 1878 at Queen's College. He was principal of University Hall, Gordon Square, 1882-90, and died May 4, 1894. Sound in criticism and an excellent teacher, he edited several libraries, including Morley's Universal and Cassell's National, and wrote a series of volumes on English writers down to Shakespeare, 1887-95; also *Lives of Palissy*, 1852; *Cornelius Agrippa*, 1856; *Marot*, 1871.

**Morley, SAMUEL** (1809-86). British merchant. Born in London, Oct. 15, 1809, the son of a hosiery merchant, he entered the family firm of I. and R. Morley, and became sole owner in 1855. Under

his guidance it became the largest of its kind, with several factories in and around Nottingham and branches all over the world.

A strong Nonconformist, he generously supported the Congregationalists. In 1865 he entered parliament as Liberal M.P. for Nottingham, but the following year he was unseated on a petition. In 1868 he was elected for Bristol and remained an M.P. until 1885. He was greatly interested in education, supported temperance, and was eager to remove Nonconformist disabilities. At one time a proprietor of the Daily News, and for some years a member of the London School Board, he died Sept. 5, 1886, having refused a peerage. In 1912 his eldest son, Samuel Hope Morley, became Baron Hollenden.

**Morley, THOMAS** (1557-c. 1603). English composer. A pupil of William Byrd, he studied music at Oxford, and in 1592 was made a gentleman of the chapel royal. He was at one time organist of St. Paul's, and in 1598 secured a monopoly for the issue of song books. He composed many ballets, madrigals, and canzonets for voices as well as instrumental music, his best known piece being the music to *It was a Lover and His Lass*, in *As You Like It*. His *Plaine and Easie Introduction to Practicall Musicke*, 1597, was the first treatise of this kind published in England.

**Morley College.** A London institution for the education of adolescents and adults from the age of 16. The college was founded in 1885 as part of the Old Vic, and was named after Samuel Morley, who gave it generous financial help. Opened in Waterloo Road, it was transferred to 61, Westminster Bridge Road, S.E.1, in 1924. A new wing was built in 1937, and this was the only part of the building remaining after the college was hit by a German bomb in Oct., 1940. The college is an aided institute under the L.C.C., from which it receives an annual maintenance grant. It offers evening classes in social science and history, philosophy and psychology, languages, English, drama, mathematics, science, art, music, dancing, and gymnastics. Weekly lec-



Samuel Morley,  
British merchant

tures, open to non-students, are held on subjects of general interest.

**Mormon, Book of.** Scriptures of the Mormon Church, purporting to be a translation of an alleged revelation to Joseph Smith. In 1827 Smith asserted that under angelic guidance he had discovered these scriptures engraved on a number of gold plates which, by Divine assistance, he professed himself able to translate. The work appeared in 1830, and is a curious story of the prehistoric inhabitants of N. America, couched in an imitation of Biblical phraseology and full of anachronisms, many of which were corrected in later editions. Smith asserted that the original was written in "reformed Egyptian" characters and in a dialect of Hebrew, which he was able to translate by looking through two crystals he called Urim and Thummim.

The Book of Mormon was first published for the "translator" by E. B. Grandin of Palmyra, N.Y., in 1830. Many editions have been published in English; and it has been translated into many other languages. The original MS. is in the custody of Frederick M. Smith, of Independence, Mo., U.S.A.

**Mormons.** Usual designation of a religious sect founded in U.S.A. under the title of The Church of Jesus Christ of Latter Day Saints. The origins of the Mormon religion are to be found in the life of Joseph Smith, upon whose alleged revelation their tenets are based. Having produced the Book of Mormon (v.s.) and communicated his "revelations" to his friends, in 1830 he formally organized the church of which he was the presiding elder. There were five other members present, and from these six arose the organization of the Church of Latter Day Saints. The earnestness of its founders, and their advent at a time when religious revivals were stirring people throughout the New England states, caused the movement to spread rapidly. From the beginning a great feature of Mormonism was the sending out of missionaries, and by the close of the year many converts had been baptized. The doctrines of the Church at that time are described under the article **Mormons, The Reorganized**.

In 1831 the Church moved to Kirtland, Ohio, where a temple was built. The inhabitants, however, resented the Mormons' intrusion, disliked their doctrines, and finally insisted upon their departure. Ever moving westwards, the headquarters of the Church were trans-

ferred in 1838 to Far West, Missouri. Persecution followed, Smith and others being charged with treason, and when they escaped the church moved to Commerce, Illinois, which they renamed Nauvoo. The city grew rapidly, and it seemed as though Zion had been reached. All this time missionaries had been busy in Europe, especially in England, and the stream of immigrants steadily increased. It was, however, in the midst of this prosperity that Joseph Smith received his fatal "revelation" on polygamy, 1843. At first he and those to whom he communicated the revelation refrained from announcing it to the world: some missionaries, indeed, whilst stoutly denying the truth of the rumours which had rapidly gone abroad, were secretly polygamists.

Amongst the Mormons themselves there was great opposition to the doctrine, and in 1844 plurality of wives was denounced in a Nauvoo paper. The indignation of the Gentiles, as the Mormons called their neighbours, was intense, and they resolved to drive the Mormons out by force. In the commotion which ensued, Smith and his brother Hyrum, who were in gaol on a charge of treason, were dragged out and shot. After much irresolution, Brigham Young was elected first president. Amid the confusion in their own ranks and the bitter hatred of their neighbours, the Mormon Church would have fallen to pieces had it not been for his able though unscrupulous management.

In 1846, under his guidance, the whole church began migration westward, and on July 22, 1847, the first party reached Great Salt Lake, near which they decided to build their city. Crops were planted, houses were built, yet another temple erected, and over all Young ruled with a rod of iron. The population increased with immigration, and in 1852 numbered over 25,000. In that year the polygamy revelation was published and the Reorganized Church (*v.i.*) broke away. Young had been trying to obtain the recognition of the Salt Lake settlement as a state, under the name of Deseret, but the publication of the revelation was fatal to his hopes. The Territory of Utah was organized instead, and Young was made governor; but he so misused his power that troops were sent to uphold government authority and the Mormon War broke out in 1857. There was, however, little friction with the troops; Young

gave in and never afterwards set himself so resolutely against the Federal power.

From 1862 the U.S. government did its utmost to suppress polygamy, but with little success until in 1882 the Edmunds Law was passed, disenfranchising polygamists and convicting nearly 500 persons of unlawful cohabitation. Young had died in 1877, and in 1890 the president of the Church, Wilford Woodruff, published a manifesto advising his followers "to refrain from contracting any marriage forbidden by the law of the land." On the condition that no plural marriages should thenceforward take place, Utah was in 1896 made a state. Ostensibly polygamy was abandoned, but in 1903 Joseph Fielding Smith (1838-1918), grandson of the "prophet" and president of the Church, admitted on oath that since 1890 he had lived with his four wives who had borne him children. On Smith's death in 1918 the presidency was given to Heber J. Grant, himself a polygamist.

The doctrines of the Utah Church, as distinguished from those of the Reorganized Church, are baptism for the dead, and celestial marriage, a doctrine teaching that, whereas death dissolves all earth-made marriages, a celestial marriage is for eternity, and women who are "sealed" to a man are his in heaven, where the greater the number of wives and children, the greater the glory. Moreover, as later teaching unfolded, the more children begotten, the more bodies for the reception of discarnate spirits.

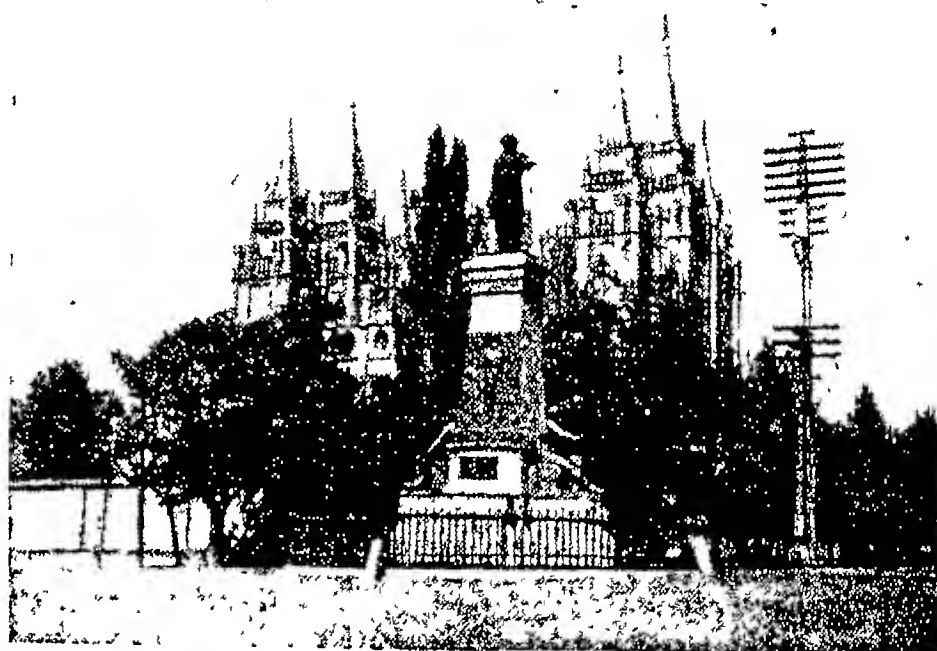
In the court of common pleas, Lake City, Ohio, it was decided in 1880 that the Reorganized Church was, so far as property was concerned, the legal successor and continuation of the Church founded by Joseph Smith, but the main body has always remained in communion with Brigham Young and his successors.

In 1948 the total membership was about 870,000, mostly in Utah, where they constituted about two-thirds of the pop. in 1940 (they were about threequarters of the pop. in the 1920s). There are a

number of Mormons also in Idaho and Arizona. Of their eight temples, four are in Utah, one each in Arizona and in Idaho, at Hilo in Hawaii, and at Cardston, Alberta.

*Bibliography.* History of Salt Lake City, E. W. Tullidge, 1886; The Founder of Mormonism, I. W. Riley, 1902; The Story of the Mormons, W. A. Linn, 1902; Scientific Aspects of Mormonism, N. L. Nelson, 1904; Family Kingdom, Samuel W. Taylor, 1951.

**Mormons, THE REORGANIZED.** Church of Latter Day Saints. After the death of Joseph Smith in 1844 a number of the Mormons, distrusting Brigham Young and refusing to acknowledge his election to the presidency of the Church, established in Zarahemia, Wis., the Reorganized Church of Jesus Christ of Latter Day Saints, 1851-



Mormon Temple at Salt Lake City, Utah, with statue of Brigham Young in foreground

52. In 1860 they were joined by Joseph Smith, the "prophet's" eldest son, who became president. They denied the doctrines of polygamy and baptism for the dead.

They believe that through apostasy from the primitive doctrines of the Christian church, the authority to administer in the ordinances of the gospel was lost. This authority was restored to earth by angelic administration in 1829-30, and men were set apart to serve in the various grades of the priesthood. These men and their successors in the work taught the principles of the Gospel, including those enumerated in the epistle to the Hebrews; faith, repentance, baptism by immersion in water, laying on of hands. The promised gifts and powers of the gospel are enjoyed by the faithful; including the gifts of prophecy, revelation, healing, visions, tongues. The "Saints" look forward to the second personal advent of Christ. Another ideal is that of a people gathered and educated in righteousness, equal in all things temporal and spiritual. The present headquarters of the



Church are in Independence. Mo. and membership is about 113,000. *Consult* History of the Church of Jesus Christ of Latter Day Saints. H. C. Smith, 1901.

**Morning Advertiser**, THE. London morning newspaper and organ of the Licensed Victuallers' Association. It was established Feb. 8, 1794. Under the editorship (1850-71) of James Grant, it was one of the first London papers to accept Reuter's telegrams. Lord Brougham and Sir David Brewster were early contributors, and the editors have included Capt. Hamber, Col. A. B. Richards, and Hamilton Fyfe.

**Morning Glory** (*Ipomea purpurea*). Major convolvulus of the seedsman. A twining, climbing herb, one of the family Convolvulaceae, it is a native of tropical America. The leaves are heart-shaped, alternate, and without teeth, the flowers large and funnel-shaped. *See* Convolvulus.



**Morning Heroes**. A choral symphony by Arthur Bliss. It was composed in honour of those who fell in the First Great War, with words selected from poets ranging from Homer to Wilfred Owen. It was first performed at the Norwich Festival in 1930.

**Morning Post**. THE. Former London daily newspaper. It was the oldest daily political newspaper and was established by Henry Bate, Nov. 2, 1772, as The Morning Post and Daily Advertiser, and edited by him during 1775-80. Its early contributors included Lamb, Coleridge, Southey, Wordsworth, Sir. J. Mackintosh, Arthur Young, and Mackworth Praed. In 1795 it was acquired by Peter and Daniel Stuart for £600. It passed into the hands of the Cromptons, paper manufacturers, in 1849, when Peter Borthwick, became first manager and then editor, being succeeded in 1852 by his son Algernon, afterwards Lord Glenesk, who became proprietor in 1876 and left it to his only surviving daughter. She in 1893 married the 7th earl Bathurst. It was sold to a group of Conservatives in 1924.

Its editors have included Sir William Hardman, 1872-90; Alger-

non Locker, 1895-97; J. Nicol Dunn, 1897-1905; Fabian Ware, 1905-11; and H. A. Gwynne. The later success of the paper dated from the reversion in 1881 from 3d. to its original price of 1d., but during the First Great War it was raised to 2d. In 1927 it was again reduced to 1d. For many years it represented generally the political views of the Right Wing of the Conservative party, though maintaining a sturdy independence of opinion. The last number appeared on Sept. 30, 1937; the paper was then absorbed by the Daily Telegraph, which became the Daily Telegraph and Morning Post. A memorial by W. H. Hindle was published in 1937; *consult also* Lord Glenesk and the Morning Post, R. Lucas, 1910.

**Mornington**. Village of co. Meath, Eire. It stands on the Boyne, 2 m. from Drogheda. From it the family of Wesley, or Wellesley, to which the duke of Wellington belongs, took the title of earl, still held by the duke. Richard Colley, M.P., who took the name of Wesley on succeeding to some estates, was made Baron Mornington in 1746, and his son Garret was made an earl in 1760. The 2nd earl was the Marquess Wellesley.

Mornington is the name of the largest of the Wellesley Islands, Queensland. It is situated at the S. end of the gulf of Carpentaria. Another Mornington is a watering-place of Victoria and yet another is a suburb of Dunedin, N.Z.

**Morny**, CHARLES AUGUSTE LOUIS JOSEPH, DUC DE (1811-65). French statesman. He was born in Paris, Oct. 21, 1811, an illegitimate son of Hortense, queen of Holland, and half-brother to Napoleon III. In 1842 he was elected deputy and, having taken part in the coup d'état of Dec. 2, 1851, he became Napoleon III's first minister of the interior. He was president of the Corps Législatif from 1854 onwards, fulfilled a mission to Russia, 1856, and was made duke in 1862. He wrote several vaudeville pieces, under the pseudonym of M. de St. Rémy. He died in Paris, March 10, 1865. *Consult* Imperial Brother, M. Chapman, 1932.

**Moro** (Spanish, Moor). Mahomedan people in the Philippine islands. Numbering 277,500, one half are in Mindanao, the other mostly in Palawan and the Sulu archipelago, with offshoots on the Borneo coast. Mainly of Indonesian stock, already Muslimised when they arrived prior to the Spanish conquest, they betray

Arab admixture, and were formerly addicted to piracy.

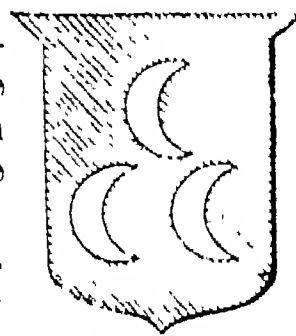
**Morobe**. Town of New Guinea. Situated on the shore of Hercules Bay in the narrow E. portion of the island, it is one of the chief harbours.

**Morocco** (Arab. El Maghreb, land of the farthest west). A country of northern Africa. It lies W. of Algeria, with a coastline along the Mediterranean Sea and the Atlantic Ocean.

The High, Middle, and Anti-Atlas ranges cross the country N.E. from Agadir, the highest areas exceeding 15,000 ft. in elevation. The Rif, a much lower range, flanks the N. coast. The parallel ridges of the Atlas form part of the great system of fold mountains which stretches discontinuously across the world from N.E. India and includes the Alps and Apennines; for this reason N. Morocco is physically European in character, and Africa may be said to begin at the edge of the Sahara. Perennial streams, the Mouionia (Muluya) and Sebou (Sebu), drain the N. slopes. S. is the Sahara, and the S. streams, Ziz, Dra, Guir, terminate on the desert edge. The S. side of the Sebou valley is forested.

Agriculturally and commercially the country is in a state of transition. While the country was associated with France (*see* History below), colonisation by Europeans was actively encouraged and experimental gardens and nurseries were established by the authorities. In the Sebou valley and near Casablanca there are thousands of acres of vineyards; there are also extensive orchards of olive, fig, orange, lemon, palm, and almond trees. Wheat and barley are the chief cereal crops. Tunny and sardines are caught in Mediterranean waters, the main fishing centres being Agadir, Safi, and Casablanca. Phosphates, manganese, zinc, copper, lead, antimony, silver, gold, and petroleum occur, and iron ore is exported. Cotton goods and sugar are the principal imports; barley, eggs, and wool being the chief exports. Trade is carried on with France and Algeria, Spain, the U.K., Netherlands, and Germany; the United Kingdom supplies about a quarter of the imports.

Railways connect Marrakesh with Casablanca, Rabat, Meknes, Fez, and Oudja, beyond which a



Morocco arms

short extension of 9 m. makes a junction with the rly. system of Algeria. A narrow gauge line connects Ceuta with Tetuan. Roads, many of which are suitable for motor traffic, connect the large towns and are being extended rapidly; a main coast road joins Rabat to Mogador.

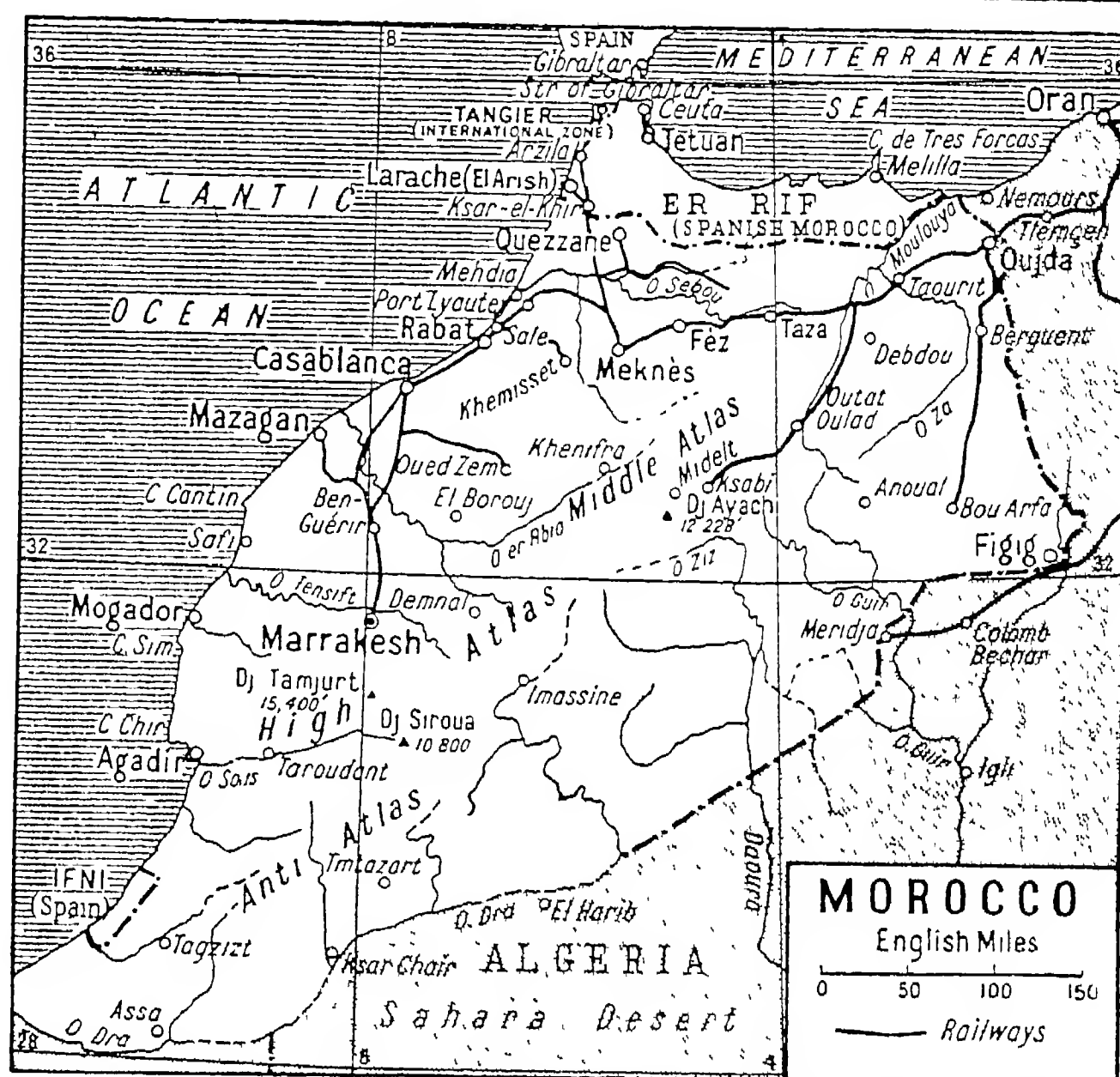
Morocco was a Roman province, called Mauretania. Throughout the Middle Ages it was in the hands of Mahomedan invaders, who used it to obtain reinforcements for the Moorish conquests and occupation of Spain. After the Moors were expelled from Spain in 1492, the Spanish Moors and Jews were a source of strength to Morocco. In 1577 both France and England had accredited representatives in the country, and Tangier was occupied by the English, 1662-84. French penetration of the country led to the Conference of Madrid in 1880, when the powers drew up a code defining the status and rights of foreigners. French progress in Algeria led to an active participation in Moroccan affairs, and in 1904 England gained a free hand in Egypt by granting the same privilege to France in Morocco.

#### The Agadir Incident

Spanish fears were pacified by the establishment of the Spanish zone, but Germany intervened in 1905 and prevented the acceptance by the sultan of the reforms proposed by France; this led to the Algeciras Conference, 1906, where the way for French control of Morocco was opened. In 1911 France and Spain were busy with military occupations, the German Mannesmann brothers were intriguing in the S., and the German warship Panther appeared at Agadir and precipitated a crisis, as a consequence of which France purchased the right to protect Morocco by concessions of territory adjacent to German Cameroons.

The sultanate of Morocco was the last of the Barbary empires to maintain its independence; but in 1912 the sultan accepted the protection of France, and by the Franco-Spanish treaty of the same year the country was divided into three areas with different administrations. Tangier and dist., about 140 sq. m. in area with 60,000 inhabitants, was made a special zone; the N. coast area became a Spanish zone, about 11,000 sq. m. in extent, with about 550,000 people. The remainder was left to the sultan controlled by a French resident-general.

In 1923 both France and Spain were engaged in the pacification



Morocco. Map showing its division into French, Spanish, and an international zone from 1912 until it was declared independent in 1956

of their respective spheres. Marshal Lyautey (q.v.), the French resident-general, arrived at Taza in April to organize a campaign against the dissident tribesmen of the Beni-Warain, and in the Wazanf region. In June of that year Spanish troops were successful against Raisuli, but in July, 1921, they suffered a severe reverse in the Melilla zone. At Sidi Dris and elsewhere heavy defeats were experienced. A column under General Navarro was cut off at Monte Arruit and destroyed after a stout resistance. General Silvestre, the commandant-general, and thousands of troops were killed at Anual, and in August Melilla was invested by the tribesmen.

#### The Rising of the Riffs

Severe fighting between the Spaniards and the tribesmen continued throughout 1924. Abdel Krim, the Riff leader, compelled the retirement of the Spanish forces in the western zone of the Spanish protectorate in Dec., and in Jan., 1925, captured Raisuli, now Spain's native auxiliary. The Marquis de Estella, as commander-in-chief in Morocco, supervised the retirement to the coastal zone.

In May, 1925, the victorious Riffs carried the war into the French portion of Morocco, but this proved fatal. The French and Spanish forces together took the offensive with such good results that in the middle of 1926 Abdel Krim surrendered. After this the

pacification of the country was rapidly completed.

The sultan of Morocco resided in the French zone, usually at Rabat, but all effective power in that zone was exercised by the French resident-general. The protectorate authorities created a large body of law, the edicts of which were issued by the sultan, but promulgated and enforced by the resident-general. In the Spanish zone the sultan's powers were delegated to a khalifa, chosen from two candidates presented by the Spanish govt. Administration was controlled by a Spanish high commissioner at Tetuan. The Spanish civil war of 1936-39 began with a rising of Spanish troops in Morocco in July, 1936, and throughout the hostilities in Spain Moorish troops formed a large proportion of Gen. Franco's forces. In 1937 there was considerable German infiltration into Spanish Morocco, which was clearly intended to develop military as well as commercial interests.

British capitulations in French Morocco, which had existed since 1856, were abolished by an Anglo-French convention on July 29, 1937, and British subjects became liable to the jurisdiction of the same tribunals as the French. British capitulations in Spanish Morocco continued in force, and the British postal agency at Tetuan was subordinate to the central British post office at Tangier.



After the defeat of France in 1940, French Morocco adhered to Vichy France, but, following the British-U.S. landings in N. Africa in 1942, the territory became an important Allied base. Unrest in Morocco following the Second Great War led in 1956 to the recognition of its independence by France, Spain, and the powers interested in Tangier.

The capitals of the ruler, who in 1957 took the title king, are Fez, Marrakesh, Mequinez (Meknes), and Rabat. Rabat is the chief seat of government. Area 174,000 sq. m. Pop. (est.) 9,000,000.

**Bibliography** The Khalifate of the West. D. Mackenzie, 1911; Morocco, P. Loti, 1914; Le Maroc, A. Bernard, 4th ed. 1918, La France au Maroc, B. Georges-Gaulis, 1920; Morocco That Was, W. B. Harris, 1921; Le Maroc, St. R. Taillandier, 1940; Morocco, J. L. Miège, 1953.

**Morocco Leather.** Leather made from tanned goatskins. It was first made in Morocco and introduced into Europe by way of Spain in the 15th century. It is used principally for upholstering furniture, book binding, and in the making of bags.

**Morón de la Frontera.** Town of Spain in the province of Seville, near the river Guadaira. It has a church dating from the 16th century. In the vicinity are famous marble quarries and chalk pits. Pop. (1950) 30,137.

**Moroni, GIAMBATTISTA** (c. 1520-78). Italian painter. Born at Bondo, near Bergamo, he studied under Il Moretto at Brescia and was influenced by Lorenzo Lotto. He died at Bergamo, Feb. 5, 1578. His paintings of religious subjects are of



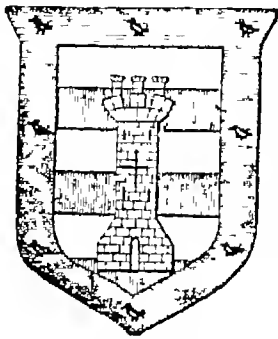
Giambattista Moroni.  
Italian painter

small importance, but his portraits attained a very high level and had some influence on Van Dyck. The most notable are the Portrait of a Tailor, and the Portrait of a Lawyer, both in the National Gallery, London.

**Morosini, FRANCESCO** (1618-94). Italian soldier. A member of an ancient Venetian family, he first distinguished himself in the Venetian navy at Naxos, 1650. He defended Candia heroically against the Turks, 1667-68, and in 1684 rapidly conquered Athens at the cost of destroying the Parthenon. Awarded the name

Peloponnesiaeo and elected doge in 1688, he sailed against the Turks for the last time in 1693, but they withdrew in terror. He died Jan. 6, 1694.

**Morpeth.** Bor. and market town of Northumberland. It stands on the Wansbeck, 15 m. N.N.W. of Newcastle. The church of S. Mary dates from the 14th century. The grammar school, chartered in 1552 by Edward VI, goes back to pre-Reformation



Morpeth arms

days. Of the castle only the keep survives. There is a town hall. At Newminster, near the town, an abbey was established in the 12th century, and there are remains of other old buildings in the neighbourhood. There are engineering works and iron foundries, and in the vicinity extensive market gardens. It is a railway junction. An important cattle market is held here on Mons. and Weds. The town grew up round the castle, once held by the Dacres. It is a bor. by prescription, and is governed by a mayor and council. Morpeth gives its name to a county constituency. Pop. (1951) 10,797.

**Morpheus** (Gr. *morphē*, form, shape). In classical mythology, the god of dreams. He was a son of Somnus, god of sleep.

**Morphia** or MORPHINE. Alkaloid contained in opium, of which it is the active principle. In medicine it is the best drug for the relief of pain, and thus induces sleep. It may be either taken by mouth or injected under the skin. When morphia is used as a routine measure a craving for it may be induced in the patient (see Drug). Emetics, artificial respiration, and heart and respiratory stimulants are serviceable antidotes to morphia poisoning. Morphia was first isolated in 1816 by the German chemist Sertürner, and forms crystalline salts soluble in water. The supply of morphia is controlled by the Dangerous Drugs Acts. See Opium.

**Morphology.** The branch of biological sciences concerned with the form of organisms. In the

narrow sense it infers the study of the externally apparent features, such as, in plants, the system of branching, phyllotaxis, leaf shape, inflorescences, and general flower structure; and, in animals, segmentation, and number and type and form of appendages and of surface covering. Since the external features are to a great extent dependent on the internal construction, the meaning of the term often includes studies of the internal parts which can best be carried out by cutting them apart. Strictly speaking, this is anatomy, especially when the method of approach is used for gaining knowledge of the grosser internal features themselves. If on the other hand cutting has for its end the study of the tissues as such rather than their distribution, such studies constitute histology and, when aimed at the details of cell structure, cytology.



Morpeth, Northumberland. Market place, looking towards the old clock tower  
Valentine

As a branch of biology, morphology is primarily important to the taxonomist since the external form of organisms provides sets of readily acquired facts upon which recognition of types, similarities, and differences can be based and so has been the foundation of classification (*q.v.*) of organisms according to nearness of relationship. But morphology is not entirely dependable for this purpose. Organisms may have features which are similar because they have common origin, or because of similarity of function of organs of different origin (analogous structures); or alternatively organs may differ in appearance but nevertheless be considered logically as having originated from the same ancestral type (homologous structures). On this account there is a rapidly growing tendency to supplant, if not to supplant, morphology with anatomical, cytological, physiological, and ecological facts.

**Morphy, PAUL CHARLES** (1837-84). American chess player. Born in New Orleans. June 22, 1837, he defeated the leading players in New Orleans before he was twelve years old. In 1857 he won the first prize at the American chess congress, and later he was in Europe. In 1864 he returned to the U.S.A. and his brain gave way. He died in New Orleans, July 10, 1884. By some Morphy is regarded as the greatest chess player of all time, and Morphy's Games of Chess, ed. J. Löwenthal, 1860, is still a classic.

**Morris, SIR DANIEL** (1844-1933). British botanist. Born at Loughor, Glam., May 26, 1844, he was educated at Cheltenham, the Royal College of Science, S. Kensington, and Trinity College, Dublin. He made a special study of the plant life of the West Indies, being director of the botanic department in Jamaica in 1879 and president of the West Indian Agricultural Conferences, 1899-1908. The successful introduction of sea island cotton cultivation into the West Indies was due to Morris, who published many books on the products of Britain's colonies in the New World. Knighted in 1903, he died Feb. 9, 1933.

**Morris, GOUVERNEUR** (1752-1816). American statesman. Born at Morrisania, New York, Jan. 31, 1752, he was descended from one of Cromwell's soldiers who had emigrated to America in 1660. His father, Lewis Morris (1698-1762), was a New York judge, his mother was of a Huguenot family, whence his Christian name.

Entering public life just when the trouble between Britain and her American colonies began, Morris was a member of the congress of his own state, and of that called by the seceding states as a whole. Until 1783 he was continually employed in the cause of the Americans. He was chairman of the committee that discussed the possibilities of reconciliation with the British representatives in 1778. A prominent member of the convention of 1787, he influenced the nature of the amended constitution, and drafted its final form.

In 1789, when the French Revolution broke out, Morris was in Paris, and he remained in Europe

until 1798, acting for two years as minister to the French republic, and at other times reporting privately on European affairs to Washington. During 1800-03 he was a member of the Senate, and was afterwards chairman of the Canal Commission. He died Nov. 6, 1816. His *Diary and Letters*, published in 1888, give an account of the outbreak of the French Revolution. *Consult* Lives, J. Sparks, 1832. T. Roosevelt, 1891.

**Morris, GOUVERNEUR** (b. 1876). American writer. Great-grandson of the American statesman, he was educated at Yale university, and became a well-known writer of adventure stories. He published his first novel, *A Bunch of Grapes*, in 1897, and later works included *Putting on the Screws*, 1909; *Yellow Men and Gold*, 1921; *Tiger Island*, 1934; *Diary of the French Revolution*, 1939.

**Morris, SIR LEWIS** (1833-1907). Welsh poet. Born in Carmarthen, Jan. 23, 1833, and educated at Sherborne School and Jesus College, Oxford, he made a name as a poet with the first series of *Songs of Two Worlds*, 1871. In 1876-77 appeared *An Epic of Hades*, which was followed by *Gwen*, a dramatic poem, 1879; *Songs Unsung*, 1883; *Gycia*, a tragedy, 1886; *Songs of Britain*, 1887; and *The New Rambler*, 1906. Knighted in 1896, he died Nov. 12, 1907.

**Morris, MARGARET** (b. 1891). British dancer and educationist. Born in London, Mar. 10, 1891 she studied dancing under Raymond Duncan, and after appearing with Ben Greet and Benson, appeared in the London production of *The Blue Bird* in 1910. She founded her own school, and her educational theory was based on a synthesis of all the arts. In 1918 she founded a school for the general education of children, and in 1925 began the application of dancing as a remedial exercise. She was appointed a member of the National Advisory Council for Physical Training and Recreation in 1937.

**Morris, THOMAS** (1821-1908). A Scottish golfer. Born at St. Andrews, June 16, 1821, he began to play golf at six years of age. In 1851 he took over the links at Prestwick and superintended the

laying out of this course. It was while he was at Prestwick that the Open Championship was in-

augurated in 1860. This was won by him in 1861, 1862, 1864, and 1867. In 1863 he was made custodian of the Royal and Ancient Golf Club at St. Andrews. On



Thomas Morris, senr.,  
Scottish golfer

the occasion of his 75th birthday a subscription was raised which totalled £1,250. He retired in Sept., 1903, and died May 24, 1908. *Consult* The Life of Tom Morris, W. W. Tulloch, 1907.

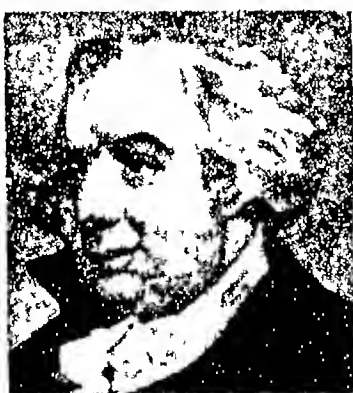
**Morris, WILLIAM** (1834-96). British poet. He was born March 24, 1834, at Walthamstow and educated at Marlborough and Exeter College, Oxford. Attracted by the High Church movement, he intended to take orders: but at Oxford he rapidly passed to a deeper interest in the arts and crafts, and the making of poetry. He met Burne-Jones, and both worshipped Rossetti from afar. Thus it came that both men, rebelling like the pre-Raphaelites against Greek academism in art, and against the Renaissance, went back to the Italian primitives and the Gothic, not realizing that the mimicry of the Gothic was just as academic as mimicry of the Greeks. Morris, fascinated by the life of the Middle Ages, spent his vigorous years in trying to replant on modern life a dead thing. More profitable was his championship of the social aims of the people.



By courtesy of Emery Walker

Having £900 a year on coming of age, Morris came to London and articulated himself to Street, the architect, at whose office he met his close friend, Philip Webb. Soon thereafter he met Rossetti, but the rugged personality of Morris was too marked to become utterly enslaved; and, while Rossetti urged him to paint pictures, Morris kept a keener interest in architecture and the beautifying of things in common use. Thus early he revealed his life-thought. Just as he weighed the prosperity of a people by the state of its poor.

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Gouverneur Morris,  
American statesman



Margaret Morris,  
British dancer  
Elliott & Fry



not of its rich, so he judged the art of an age by its craftsmanship, rather than by its genius in easel-pictures. But it is said he erred in condemning machine-made things wholesale, instead of trying to improve their design.

Morris took rooms with Burne-Jones at 17, Red Lion Square.



Morris Dance. A figure in the old English dance, performed by the Polesworth (Warwickshire) Dancers. Above, sword dance and boy riding a hobby horse.

where he began at once the art revolution by designing furniture. In 1857 he took part in Rossetti's decorating of the debating hall of the Oxford Union with tempera paintings from the Morte d'Arthur, work which was soon wrecked by the decay of the material; it was Morris's foreground of sunflowers that started the much-chaffed badge of the Aesthetes. In April, 1859, Morris married the beautiful Jane Burden. Desiring an ideal home, and finding an orchard and meadow at Bexley Heath, in Kent, he there engaged Philip Webb to build him the famous Red House. The difficulty of getting furniture to suit it led to the foundation of the firm of Morris and co., which undertook the beautifying of everything, from the wallpapers and stained-glass windows and furniture to the cups and saucers, dishes, and dog-irons.

Illness soon compelled Morris to move to town; and, selling the Red House, he settled in an old house in Queen Street, Bloomsbury, in 1865. Morris was now able to devote his time to poetry again, and composed his epic, *The Life and Death of Jason*, 1867, *The Earthly Paradise*, a series of tales from Greek and medieval sources, 1868-70, and *Love is Enough*, 1872, and was soon acknowledged as a great poet. In 1871 Morris, with Rossetti, took the beautiful old house in the Thames valley called Kelmscott Manor House. The very charm of the place made him fret over the sordid lives of the workpeople.

In 1871 he went to Iceland; in 1873 to Italy; and, bored by the Renaissance, back to Iceland again.

In 1875 the Morris firm broke up, and in 1878 he went to live in his picturesque house at Hammer-smith Mall on the river's edge. He had translated the Volsunga saga with Magnusson in 1870; in 1876 appeared his *Sigurd the Volsung*. About 1877 Morris stepped into the arena of politics to prevent England from interfering over the Bulgarian atrocities. He was soon in the van of the Socialist movement—a movement which, as he maintained, by revolution



alone could rid the privileged classes of economic power; in 1883 he publicly declared this.



Of Morris's prose romances, the best-known are the *Dream of John Ball*, 1888, and *News from Nowhere*, 1891. Having mastered tapestries, Morris turned to printing. In 1888 he decided to print his prose romance *The House of the Wolfings*, and in 1889 *The Roots of the Mountains* in his Kelmscott Press. Then followed other prose romances, *The Glittering Plain*, *The Wood Beyond the World*, *The Well at the World's End*, *The Water of the Wondrous Isles*, and *The Sundering Flood*. He died Oct. 3, 1896. See Art; Kelmscott Press; Pre-Raphaelites.

*Bibliography.* Works, 24 vols., 1910-15. *The Letters of William Morris* 1950; *A Study in Clough, Arnold, Rossetti and Morris*, A. Stopford Brooke 1908; *Lives*

A. Vallance 1897; J. W. Mackail, 2 vols., 1899; A. Noyes, 1909; A. Clutton-Brock 1914; H. Jackson 1926; P. Bloomfield 1934; M. R. Grennan, 1946; E. and S. Goodwin 1948; E. Meynell 1948.

**Morris Dance** (Span. *morisco*, Moorish). Popular dance, said to have been ac-

quired from the Moors perhaps on the return of John of Gaunt from Spain in the reign of Edward III. In Tudor times it was well established in England as a festival dance, especially on May day, and references to it abound in English literature. Stock characters figuring in the dance around the may-pole were Maid Marian (*q.v.*), frequently impersonated by a man, her paramour, her jester, Friar Tuck, a gentleman, clown, Bavarian or fool, hobby-horse, and foreigners perhaps *Moriscos* or *Moors*.

The music used for Morris dancing differs in various parts of England, and there seems to be a good deal of freedom in using old popular song tunes as well as the few undoubtedly genuine Morris tunes. The majority of the tunes are in 2-4 or 4-4 time, but 6-8 and 3-4 are not unknown. The oldest recorded Morris tune is found in *Arbeau's, or Tabourot's Orchesographie*, 1589, and runs as follows:

Some of the tunes are named after their places of origin or usage, such as the *Staines Morris*, beginning:

**Morrison.** Mt. of Formosa. The peak, whose altitude is variously given as 13,075, 13,945, and 14,272 ft., is the culminating point of the Niitaka range, the S. portion of the mountainous backbone of the island. The Japanese name is Niitaka-yama.

**Morrison,** ARTHUR (1863-1945). British novelist. Born Nov. 1, 1863, he became a clerk in the civil service, writing in his leisure hours. In 1890 he took up journalistic work on the



Arthur Morrison  
British author  
Russell

National Observer and elsewhere, and gained a reputation with his stories of life in the E. end of London, *Tales of Mean Streets*, 1894, and *A Child of the Jago*, 1896. Other novels include the detective stories, *Adventures of Martin Hewitt*, 1896; *Cunning Murrell*, 1900; *The Red Triangle*, 1903; *Green Ginger*, 1909. He also collaborated in the writing of three plays. An authority on Oriental art, Morrison published *The Painters of Japan*, 1911. He died on Dec. 4, 1945.

**Morrison, HERBERT STANLEY** (b. 1888). British politician. Born in Brixton, Jan. 3, 1888, Morrison



Herbert Morrison  
British politician

was educated at an elementary school and went to work as an errand-boy at the age of 14. In turn shop assistant, telephone operator, and deputy circulation manager of a newspaper, he became secretary of the London Labour party in 1915. After being mayor of Hackney, 1919-20, he was elected to the L.C.C. in 1922, and became leader of the Socialists there; he became an alderman in 1931, and from 1934 to 1940 was leader of the council, in which capacity he was responsible for the evacuation of London children at the beginning of the Second Great War. He was M.P. for S. Hackney in 1923-24, 1929-31, and 1935-45, for E. Lewisham 1945-50, then for S. Lewisham. He was minister of Transport in the Labour government of 1929, and in 1931 became a Privy Councillor. In March, 1931, he introduced the legislation that set up the London Passenger Transport Board. Defeated at the 1931 parliamentary election, Morrison concentrated on his work in the L.C.C.; but he returned to the house of commons in 1935, and in 1940 joined Churchill's coalition government as minister of Supply. In Oct., 1940, he became Home secretary and minister of Home security, and was a member of the war cabinet, 1942-45. Lord president of the council and leader of the commons, 1945-51, secretary for Foreign Affairs, March-Oct., 1951, he was made C.H. in 1951. His books included *How Greater London is Governed*, 1935; *Government and Parliament*, 1954.

**Morrison, ROBERT** (1782-1834) British missionary. He was born at Morpeth of Scottish parentage.

Jan. 5, 1782, and in 1807 was sent by the L.M.S. as a missionary to Canton. Two years later he be-



came an official translator to the East India Company. He translated the Bible into Chinese, prepared a grammar and dictionary, and was the founder of the Anglo-Chinese College at Malacca. He died at Canton, Aug. 1, 1834.

**Morrison, WILLIAM SHEPHERD** (b. 1893). British lawyer and politician. Born Aug. 10, 1893, he was

educated at George Watson's college and Edinburgh university, and was called to the bar in 1923. After being private secretary in turn to the solicitor-general and the attorney-general, he was Conservative M.P. for Cirencester and Tewkesbury from 1929. Financial secretary to the Treasury in 1935, he was appointed minister of Agriculture and Fisheries in 1936, chancellor of the Duchy of Lancaster in 1939, minister of Food in 1939, postmaster-general in 1940, and minister of Town and Country Planning, 1943-45. During 1931-36 he was a member of the Medical Research Council and the Industrial Health Research Board. He was made a privy councillor in 1936.

**Morrison Shelter.** All-steel indoor air-raid shelter introduced in the U.K., Feb., 1941, for the protection of house occupants during air raids. Named after Herbert Morrison, then minister of Home Security, it was in the form of a table, 6 ft. long by 4 ft. high, and 4 ft. wide, the top and corner posts being of sheet steel and the sides enclosed with steel-wire mesh. During the day it was used as a table. It protected the occupants from the debris of a collapsing house, and afforded a certain amount of protection against blast. Just over a million were manufactured and supplied by the ministry of Home Security and distributed free to families with an annual in-

come below £350. It could also be purchased by others. The public had great confidence in this type of shelter, which saved the lives of countless people. See *Air Raid Shelter* illus.

**Morrison OR MORISTON.** River of Inverness-shire, Scotland. It is 18 m. long, and links Loch Clunie (or Cluanie) and Loch Ness, into which it flows at Invermorriston. A hydro-electric scheme, to cost £8,000,000, approved in 1949, was to raise the level of Loch Loyne on the river Loyne, a trib. of the Morrison, lead the waters thus caught to Loch Clunie, and raise the level of that loch. Two dams and five power stations were to be erected in the beautiful glen through which the river flows.



Morrison. The Scottish river where it descends into Loch Ness at Invermorriston

**Morristown.** Town of New Jersey, U.S.A., the co. seat of Morris co. On the Whippany river, 22 m. by rly. W. of Newark, it is served by the New Jersey and Pennsylvania and other rlys. Large estates of the wealthy surrounded the town until 1920-30, but smaller suburban homes have now largely replaced these. Settled about 1710, Morristown was incorporated in 1865. Twice during the Revolution—in 1777 and in 1779-80—it was the headquarters of Washington. Pop. (1950) 17,124.

**Morris Tube.** Rifled steel tube of .22 calibre inserted into the barrel of a .303 rifle, to permit of small bore cartridges being fired from the larger calibre weapon. It permits rifle practice to be carried out at short range. In the Royal Navy, Morris tubes are inserted into guns of all calibre to provide target practice without the expenditure of full-sized ammunition. See *Musketry; Rifle*.

**Morse, SAMUEL FINLEY BREESE** (1791-1872) American inventor. He was born April 27, 1791, at Charlestown, Mass., and graduated at Yale, 1810. He studied art in



England with Allston and Benjamin West, exhibiting at the R.A. in 1813. Two years later he returned to New York and settled down as a portrait painter. In 1826 he was appointed first president of the national academy of design. He was interested in science and experimented in the phenomena of electricity, conceiving the possibility of using it as a means of communication, with the result that in 1835 he produced a telegraph at New York university, half a mile in length. A public exhibition of his invention in 1837 led to his association with the New Jersey firm of Vail.



S. F. B. Morse, American inventor

He was at first unable to interest American or European governments in his invention, but in 1843 Congress voted money for a line from Washington to Baltimore, and the first telegraph message, reading: "What hath God wrought?" was dispatched from the capital, May 24, 1844. Morse helped to introduce daguerreotyping into America, and conceived the idea of an Atlantic cable. He died at New York, April 2, 1872. *Consult* Life, S. I. Prime, 1875; Letters and Journals, ed. E. S. Morse, 1914.

**Morse Code.** System of signals for the telegraphic transmission of alphabetic letters, numerals, punc-

A	..	N	..
B	....	O	----
C	....	P	----
D	....	Q	----
E	.	R	..
F	....	S	...
G	----	T	-
H	....	U	...
I	..	V	....
J	----	W	----
K	----	X	....
L	....	Y	----
M	----	Z	....

Morse Code. Alphabet, numerals, and punctuation symbols used in the United Kingdom

uation marks. The original code, devised in 1837 in collaboration with Alfred Vail (1809-59), was introduced by S. F. B. Morse (v.s.) for use with his self-recording telegraph. A revised code, 1844, now called American Morse, is still in local use within the U.S.A. and Canada. It allocates to the letters most frequently used the shortest signals.

In 1851 an international conference compiled a code, partly from the American and partly from three other systems. This international code is now used universally for civil and military purposes. It distinguishes the letter signals by limiting the elements to a maximum of four, the numeral signals and punctuation signals being uniformly composed of five and six elements respectively. The length of the dash is three times that of the dot. When sending long lists of figures the short numerals are used. Although Morse is called the dot-and-dash system, the two symbols are not necessarily short and long in transmission. They may represent uniform needle-deflections to left and right of a median line, and in the siphon recorder used on long distance cables are printed in a continuous zigzag from side to side. Dots and dashes are usually longer when transmitted by flag, lamp, or heliograph. *See* Code; Signalling.

**Mortagne.** Town of France. In the dept. of Orne, it crowns a steep hill, 25 m. E. of Alençon. The lofty tower of the fine Gothic church, which was built in the 15th-16th centuries, collapsed in 1890. Textiles and gloves are manufactured.

Mortagne was captured by U.S. troops on Aug. 3, 1944; but the Germans retook the town on Aug. 7, only to lose possession the same day to a counter-attack made by U.S. units. On Aug. 9, German tanks recaptured Mortagne, but were finally driven out on Aug. 12.

**Mortain.** Village of France in the department of Manche, 34 m. S.S.W. of Saint Lô. The area was the scene of heavy fighting in 1. Aug., 1944. U.S. forces, having cleared the Coten tin pen., turned S.W. from St. Lô, took Avranches and Granville on 2. July 31, and advanced rapidly W. into Brittany. On the night of Aug. 6-7 the Germans made a powerful armoured counter-attack westward from the Mortain area, near the junction of the British and U.S. fronts, in the hope of reaching the coast and splitting the Allied forces. Supported by British aircraft, American infantry and armour met and held the enemy, and in the subsequent counter-attack

prevented the German armour from disengaging while the Falaise (q.v.) gap was closing. This was the last German tank offensive but one—the last being Rundstedt's in the Ardennes (q.v.). Mortain itself changed hands several times in the fighting, it was secured by the Americans on Aug. 12.

**Mortality** (Lat. *mors*, death). Literally, the state of being mortal. It is sometimes used as a synonym for death rate, e.g. the mortality from tuberculosis is very heavy. Tables of mortality consist of figures showing the number and proportion of persons of a given age who will die each year. Bills of mortality are abstracts from parish registers showing the number of persons who died in the parish during certain periods. These were rendered unnecessary by the introduction of compulsory registration of births, marriages, and deaths. *See* Death Rate; Infant Mortality.

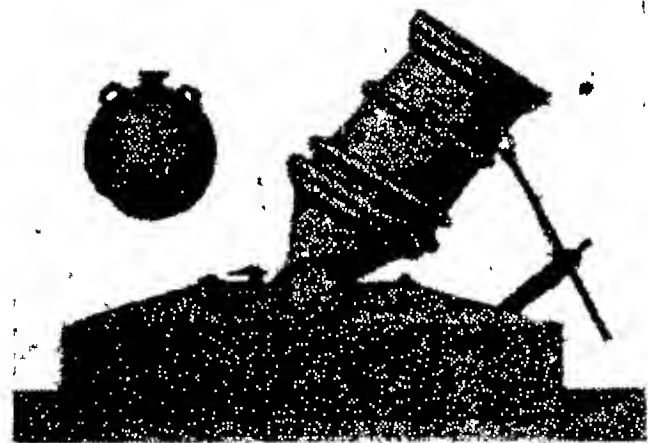
**Mortal Sin.** Term used in Roman Catholic moral theology for sins necessarily and immediately fatal to spiritual life unless sincerely confessed, repented of, and pardoned. Sins of a lesser degree are known as venial ones. Mortal sin has been defined as a direct and wilful transgression against some known command of God, either by omission or commission. Seven sins are reckoned as mortal or deadly, i.e. pride, avarice, lust, envy, gluttony, anger, and sloth. In the Roman Catholic Church it is held that mortal sin can only be forgiven by absolution after confession, while venial sins are forgiven by simple contrition and by a renewal of grace through Holy Communion or otherwise. *See* Sin.

**Mortar.** Mixture of fine aggregate, usually sand, and cementing material, first mixed dry and then with water. It is used for cementing together bricks, stones, and clay and concrete blocks in building construction. Lime mortar was formerly in extensive use, but has now been largely replaced by cement mortar, though if this is very rich in cement the free salts present may cause efflorescence and decay of the walling bricks or blocks. A mortar of one part Portland cement to three parts clean sand is used in walls where good strength and durability are required.

Cement-lime mortar is not so strong as cement mortar, but has certain advantages. It does not shrink very much and so crazing and cracking is avoided, and the low proportion of cement greatly

reduces the risk of efflorescence. It is widely used for house walls. A suitable mix consists of one part Portland cement, one part hydrated lime or lime putty, and four parts clean sand. This mix works and spreads easily. Sand should consist of a variety of grain sizes from small to large, evenly graded. It must be clean, as any vegetable or free chemical impurities will greatly reduce the strength of the mortar, and may cause decay. Sufficient water should be used to produce a mix easily worked, but not thin enough to allow the mortar to squeeze out under the bricks or blocks. Grout is a very thin semi-liquid mortar used for filling interior spaces and fissures. It is poured, but a tube or a cement gun may be used to assist the process.

**Mortar.** Close-support infantry weapon which reached a high degree of efficiency in the Second



Mortar employed in old warfare, with large shot, which was fitted with handles for carrying

Great War. It was developed from the medieval bombard used for throwing projectiles over walls. At the siege of Constantinople in 1453 Mohammed II used bombards capable of firing stone shot weighing 1,800 lb. to a distance of 300 yds. A century later the French organized bombard companies to support their infantry. By the 16th century the bombard had developed into the mortar, firing metal shot at controlled ranges, and was essentially a cannon of large calibre and short range. After the introduction of rifled artillery in the 19th century, the mortar fell into disuse; its projectile lacked the penetrating power of a shell, and its accuracy was influenced by wind.

It was revived during the trench fighting of the First Great War, when various types were used. The earliest was a cylinder of cast iron open at one end and closed at the other, where there was a touch-hole. The bomb consisted of a tin can fitted with fragments of metal and a bursting charge. Wrapped gunpowder was dropped into the muzzle, poked with a stick to break the paper covering, and the

bomb slid in on top. A fuse was then pushed in and lit. Later the Stokes gun was introduced; the largest had a bore of 9.5 ins. and threw a 150-lb. projectile. They were inaccurate, and their ammunition, even when fired by ballistite cartridge, was always liable to premature explosion.

At the outbreak of the Second Great War the British army was equipped with a 2-in. mortar, which could fire H.E. or smoke projectiles weighing 2 lb. 2 oz. to a maximum range of 500 yds. at the rate of 20 a minute. This gave quick, close support to infantry on ground not covered by artillery observation. Its disadvantage was its short range and low destructive effect against concrete and armour.

In 1941 this was replaced by the 3-in. mortar, which had a range of 1,000 yds. and discharged a 3-lb. H.E. or smoke projectile. A standard weapon for parachute troops, it was effectively used at Arnhem. A 4.2-in. mortar was introduced in the N. Africa campaign. It had a maximum range of 2,400 yds. and could fire five 20-lb. bombs a minute. It was issued to infantry support groups. In 1943 a 6-in. mortar was developed for mounting on tanks as a close-support weapon. It was used by the Royal Engineers and first went into action during the Normandy landings on June 6, 1944.

Germany used large numbers of mortars in the Second Great War, their earlier types being similar to the British. They later introduced the mobile multiple-mortar; one of these had ten barrels. Towards the end of the war Germany had completed, but never put into service, a self-propelled mortar which weighed 120 tons and threw a one-ton projectile to a distance of 8 m. In 1943 the Luftwaffe introduced a 21-cm. mortar for use on fighter aircraft, but it was generally ineffective. The U.S. army used 12-in. mortars in defence of Corregidor (*q.v.*), and at the end of the war was proving a self-propelled mortar 38 ft. long which fired a two-ton projectile capable of penetrating 10 ft. of concrete at a range of four miles. Russian and Japanese mortars of the Second Great War were mostly based on German designs. The heaviest Japanese mortar, used in the defence of Okinawa, threw a projectile weighing 1,000 lb.

The 6-in. mortar mounted on tanks has a fire power equal to that of a heavy and much less mobile howitzer, and in addition, the supreme advantage of keeping pace with the advance.

**Mortara.** Town of Italy, in the prov. of Pavia. It stands on the Arbogna river, 32 m. S.W. of Milan, and is an important rly. junction, with iron works and factories for making hats, cheese, and machinery. Its old church contains some notable paintings. On March 21, 1849, the Austrians defeated the Sardinians here.

**Mortara Case, THE.** Diplomatic incident caused by the alleged abduction of a Jewish child in 1858. Edgar Mortara, son of a Bologna Jew, was baptized Jan. 24, 1858, when five or six years old, by his Christian nurse who thought that an illness was likely to prove fatal. The archbishop of Bologna thereupon claimed the child as a Christian, took him away from the parents, June 23, and concealed his whereabouts. England, France, and Prussia made representation to Pope Pius IX in 1859, but he refused to interfere, and beyond the fact that the pope himself had adopted the lad, nothing more was heard of Edgar Mortara until 1870, when the Italians entered Rome and found him in a seminary. He refused to revert to Judaism, and eventually became an Augustinian monk and an able preacher.

**Mortarboard.** Academic cap, also called cater (*i.e.* four-cornered cap or trencher). It consists of a skull cap surmounted by a stiff, square cloth-covered board and silk tassel, and derives its popular



Mortarboard as worn at universities

name from its resemblance to the square board with a handle used by bricklayers. It originated in the old ecclesiastical *biretum*, or barret cap, the ridged sutures of which were emphasised until it was nearly square with a flat top; this surface was enlarged and the *biretum* became the square cap of the English high churchmen of the 17th century. In the 18th century the square was stiffened with wood or cardboard and a tassel was substituted for the original ornamental knot. See Cap.

**Morte d'Arthur, THE.** Name of several works in verse and prose embodying the medieval legends of King Arthur and the Knights of the Round Table. Of these the most important is the compilation, mainly from French sources, completed by Sir Thomas Malory in 1470, and first printed by Caxton in 1485. Malory's work, of deep intrinsic interest, is remarkable for its selection and arrangement of



the more notable features of the Arthurian story, the loves of Lancelot and Guinevere, and the Quest of the Holy Grail. It is the finest extant example of 15th century English prose, a foundation stone of English prose fiction, and proved a source of inspiration to Spenser, Matthew Arnold, Swinburne, Morris, and Tennyson, whose Idylls of the King are largely based upon it. There are editions by J. Gollancz, 1900; E. Strachey, 1898, repr. 1904; E. Rhys, 1909. See Arthur; Elaine; Malory; Tennyson.

**Mortgage.** In English law, the creation in property of an interest which is to cease when a certain sum of money, usually with interest, is paid on a certain date. When the owner of land, leasehold or freehold, wishes to borrow money on the security of his land, he usually does so by mortgage.

In some mortgages—*e.g.* building society mortgages—it is intended that the borrower (mortgagor) shall repay the sum lent to the lender (mortgagee) by instalments; in others—*e.g.* where the money is lent by trustees—the mortgage is regarded as a permanent investment and it is not intended that any part of the sum lent shall be repaid until the whole of it is called in. The law of mortgages was much changed by legislation in 1925 relating to real property. Mortgages may be either legal or equitable. A legal mortgage is effected by deed in which the borrower grants a lease of the land to the lender for 3,000 years if the land is freehold, or if it is leasehold a sub-lease for some period shorter by a few days than his own lease. An equitable mortgage is effected by the borrower depositing with the lender the title deeds of the land. Both kinds may be made by a document creating a charge on the land. An equitable mortgage is mainly used where money is to be borrowed for a short time only. Any mortgage not protected by the lender taking possession of the title deeds is registrable as a land charge.

A mortgage deed usually provides that the money lent shall be repaid in six months from the date of the loan, although the parties rarely intend this to be done. After six months the borrower may still redeem the land on giving six months' notice and paying all that is due. This right is known as his equity of redemption. He loses this right when the lender exercises his power of sale or forecloses, *i.e.* applies to the court for an order that the land shall belong to him

unless the borrower repays the money within six months. The lender can sue the borrower for the money; he can enter into possession of the land; he can sell it; or he can appoint a receiver of the rents and profits.

The Rent Restriction Acts fix a standard rate of interest for mortgages on houses within the Acts, and, except where the mortgage provides for repayment of the capital by instalments spread over 10 years or more, prevent the lender from calling in the mortgage or enforcing his security except on certain grounds. See Land Laws: Rent Restriction.

**Mortification** (Lat. *mortuus*, dead; *facere*, to make). In Scots law, a gift of land made inalienably for ecclesiastical or charitable purposes. The word is also applied to lands so given, and to funds or institutions supported from the revenues therefrom. It is equivalent to the English mortmain (*q.v.*).

**Mortillet**, LOUIS LAURENT GABRIEL DE (1821–98). French anthropologist and zoologist. Born at Meylan, Isère, Aug. 21, 1821, he studied in Paris. The propaganda of a newspaper which he acquired led, after the 1848 revolution, to a sentence of imprisonment. To elude this he resided abroad, mostly in Italy and Switzerland. Work at the Geneva natural history museum induced him to study the Swiss lake-dwellings. Returning to Paris in 1864, he became in 1868 curator of the St. Germain museum. He died Sept. 25, 1898.

**Mortimer.** Famous English family. Of Norman origin, the name is taken from Mortemer, their home in Normandy. Ralph de Mortimer followed William the Conqueror to England and obtained a good deal of land in the border counties, where the name is perpetuated by Mortimer's Cross and Cleobury Mortimer. In 1086, according to Domesday, he had land in eleven counties, and his successors, whose chief stronghold was first Wigmore Castle and later Ludlow Castle, were equally powerful. Roger Mortimer helped to win the battle of Evesham for Henry III, and another Roger obtained by marriage great estates in Ireland. The latter was the baron who, the lover of Isabella, helped to overthrow her husband, Edward II. In 1328 he was made earl of March and, after his death as a traitor, his title and estates were restored to his grandson, Edmund. This earl married Philippa daughter of Lionel, duke of Clarence, and the Mortimers were thus members of

the group in whom the succession to the crown lay. The house became extinct when Edmund, the 5th earl, died Jan. 19, 1425. See March, Earl of; Wigmore.

**Mortimer's Cross**, BATTLE OF. Fought during the Wars of the Roses, Feb. 2, 1461. Mortimer's Cross is near Wigmore in Herefordshire. Edward of York, afterwards King Edward IV, was then at Shrewsbury, and the news of his father's death and the Yorkist disaster at Wakefield encouraged the Lancastrian lords to collect against him. The details of the engagement are lost, but it ended in a Yorkist victory. Owen Tudor was one of the captives executed by Edward after the battle.

**Mortlake.** Parish and district of the mun. bor. of Barnes, Surrey, England. It flanks the Thames, and has a rly. station on the Waterloo-Richmond line. The chief building is St. Mary's church. Famous chiefly as the finishing point of the Oxford and Cambridge boat race, Mortlake was at one time celebrated for tapestries, a factory, said to be the first in England, having been set up here in 1616. For centuries it has been a centre for brewing and malting. Mortlake House was long a residence of the archbishops of Canterbury. Pop. (est.) 23,850.

**Mortlake Ware.** Enamelled delft and stoneware. It was manufactured at Mortlake between 1764 and 1820. Under Wagstaffe, and then Wisker, fine landscape and figure painting was applied to punch-bowls, panels, etc. See Pottery.

**Mortmain** (Fr. *mort*, dead; *main*, hand). Term used for land that cannot be alienated owing to the fact that it is in a dead hand. In England in early times a great deal of land was given by the kings to religious corporations. This process was disliked by the great nobles, and was inequitable, mainly because, as the corporations never died, the land in question never paid the dues, which were the medieval equivalent of the modern death duties. Consequently, in 1279, a law called the statute of mortmain prohibited "any person whatsoever, religious or other, to buy or sell, or under colour of any gift, term, or other title, to receive from anyone any lands or tenements in such a way that such lands and tenements should come into mortmain."

This law was designed to check the growing wealth of the church, for a practice had grown up of conveying lands to the church, the con-

veyance being accompanied by a private bargain allowing control to remain with the grantor and his heirs, who thus avoided feudal dues. Later statutes of mortmain were designed to close the loopholes of evasion in the enactment.

Under the Mortmain and Charitable Uses Act, 1888, which repealed all the old statutes and partly re-enacted them, no land or interest in land may be acquired by a corporation except under specific licence from the crown or by virtue of some statute. See Land Laws.

**Morton, EARL OF.** Scottish title borne since 1458 by a branch of the family of Douglas. One of the family, James (d. 1430), was called lord of Dalkeith, and his descendant, another James, was made Lord Aberdour and earl of Morton in 1458, the year when he married Joan, daughter of King James I. The 3rd earl had no sons, but his daughter married a Douglas who became the 4th earl and figures in history as the regent Morton. Upon his execution the earldom was given to a Maxwell, but later the earldom was restored to a Douglas.

William, earl of Morton in the time of Charles I, was lord treasurer of Scotland. To obtain funds for the king's cause, he sold Dalkeith to the Scott family, obtaining a grant of the islands of Orkney and Shetland. This was contested, but the islands were kept by the earls until about 1750, when they were sold to Baron Dundas, ancestor of the marquess of Zetland. James (d. 1768) became president of the Royal Society. The eldest son of the earl is known as Lord Aberdour. The numbering of the earls is uncertain, but Sholto Charles John Hay Douglas (b. April 12, 1907), who succeeded his grandfather in 1935, is usually described as the 21st earl. See Douglas.

**Morton, JAMES DOUGLAS, 4TH EARL OF** (c. 1526-81). Scottish statesman. A son of Sir George Douglas, he married Elizabeth, daughter of the 3rd earl. In 1553 he succeeded to the title and estates, and was made lord chancellor in 1563, and was one of those



4th Earl of Morton  
Scottish statesman

who arranged the murder of Rizzio. He was largely responsible for the defeat of Mary Queen of Scots, at Langside. In 1572 he was made regent of Scotland, and after a

short period of enforced retirement, he recovered his influence over the young king, retaining power until 1580, when he was accused of having shared in the murder of Darnley. Found guilty, he was put to death by the maiden (*q.v.*), his own invention, June 2, 1581.

**Morton, HENRY VOLLAM** (b. 1892). British journalist and author. He was born July 26, 1892, and, after working on the Birmingham Gazette, 1910-12, he became a sub-editor on the Daily Mail, later transferring successively to the Evening Standard (1919), Daily Express (1921) and Daily Herald (1931). Between 1925 and 1940 he published a series of travel books: *The Heart of London*, *In Search of England*, *In Search of Scotland*, *In Search of Ireland*, *In Search of Wales*, *In the Steps of the Master*, etc., all highly popular.

**Morton, JOHN** (c. 1420-1500). English prelate. Born in Dorset, he was educated at Cerne Abbey, and at Balliol College, Oxford. He was active on the Lancastrian side in the Wars of the Roses. After the battle of Tewkesbury, Morton submitted to Edward IV, and in 1473 he was made master of the rolls, in 1479 becoming bishop of Ely. He was imprisoned by Richard III, but escaped and joined the exiled Richmond, the future Henry VII, in Flanders. After Henry obtained the crown, he made Morton archbishop of Canterbury and lord chancellor. Created a cardinal in 1493, he remained the king's chief counsellor until his death at Knole, in Kent, Sept. 15, 1500. His name is perpetuated by Morton's Dyke, which he built from Wisbech to Peterborough, and by Morton's Fork, a fiscal device for extracting money from both rich and poor.

**Morton, JOHN CAMERON ANDRIEU BINGHAM MICHAEL** (b. 1893). British writer, known as J. B. Morton, also famous as "Beachcomber." Educated at Harrow and Worcester College, Oxford, he published his first book, *The Barber of Putney* (a war novel), 1919. In 1924 he began to write the satirical *By the Way* feature in the Daily Express, inventing the imaginary public school Narkover and the popular character Mr. Thake. Morton's many books include historical studies, e.g. *The Bastille Falls*, 1936; *The Dauphin*, 1937; *Saint-Just*, 1939.

**Mortuary** (late Lat. *mortuarium*, from *mortuus*, dead). In the modern meaning of the word, a place for the reception of dead bodies, pending burial. Every

sanitary authority in London must provide a mortuary and every local authority and parish must also do so if required by the ministry of Health.

**Morvan, LE.** Mountain dist. of France, lying in the depts. of Nièvre, Côte-d'Or, Yonne, and Saône-et-Loire. The chain of hills, with Bois-du-Roi (2,960 ft.) and Mt. Beuvray (2,690 ft.) as its chief points, is mostly of gneiss and granite formations, and is covered with beech and chestnut forests.

**Morveau, LOUIS BERNARD GUYTON DE** (1737-1816). A French chemist. He was born Jan. 14, 1737, at Dijon, and was avocat-général to the parlement of Dijon, 1755-82, also teaching chemistry there for 15 years. In 1772 he published his *Digressions Académiques*. The following year he introduced fumigation as a safeguard against contagion. In 1782 he began, with Lavoisier and others, the great work on chemical nomenclature, the first volume of the *Dictionnaire de Chimie* being published in 1786. Elected to the Convention, 1792, he voted for the death of Louis XVI, and became a member of the committee of public safety. He died Jan. 2, 1816.

**Morvi.** Town of Bombay, India, in Madhya Saurashtra dist. It is 35 m. N. of Rajkot, on the river Machhu where it is bridged, and was formerly the capital of Morvi princely state, 942 sq. m. in area, which in 1948 became part of Saurashtra, itself merged in Bombay 1956. Pop. (1951) 40,722.

**Mosaic** (Low Lat. *musarcus*, belonging to the Muses, artistic). Term applied (1) to the tessellated work in ancient Roman pavements, and (2) to classical and medieval decorations executed with inlaid cubes of various stones, metals, and glass. Mosaic was derived from Hellenistic art. Its principal use in Roman times was to imitate coloured woollen carpets spread on pavements. The early Christians, searching for a technique capable of producing images resplendent in light and colour, found it in mosaics of melted coloured glass and squares of gold. In the Constantinian period inlaid marbles of various sizes (*opus sectile*) and fragments of marble and hard stone (*opus alexandrinum*), put together so as to form a geometrical design, were largely employed for mural decoration.

As the technique was enriched by the addition of glass and enamel, the art was no longer confined to geometrical patterns, but took the place of pictorial fresco decora-



tion. These pictures in mosaic were entirely restricted to the interiors of Constantinian basilicas; it was not until the 12th or 13th century that they began to appear on the façades. Fine interior mosaics of the 4th and 5th centuries are preserved in S. Maria Maggiore and the baptistery of S. John Lateran at Rome and in the churches at Ravenna. In the baptistery of the Orthodox at Ravenna the mosaics of the cupola and drum are esteemed the most complete and best preserved of all baptistery mosaics. Those of S. Mark's, Venice, are also notable. The remains of fine medieval mosaics are to be seen on the shrine of the Confessor, Westminster Abbey.

In all Byzantine architecture (*q.v.*) mosaic is the recognized decoration for walls, ceilings, or pavements. The pieces were laid on a ground of fresh stucco of lime and marble dust of such consistency and firmness that when dry



the first skeleton was discovered at St. Pietersberg on the Meuse. Somewhat similar to a snake in appearance, with strong paddles, it attained a length of 40 ft. Numerous specimens have been found in the Cretaceous deposits of Europe and N. America.

**Mosaylima** or **MOSEILIMA** (d. 643). Arabian prophet. Of the Beni-Henifah tribe, from Yamama, he was contemporary with Mahomet and was already known for his piety when the prophet began his



**Mosaic.** This example from ancient Pompeii, representing a dog, with the warning *Cave Canem*, beware of the dog, is now in the National Museum, Naples. The upper picture shows a section of the modern mosaic pavement in the National Gallery, London, the work of a Russian artist Boris Anrep. The whole pavement depicts the activities of mankind: this part represents farming

the mosaic could be polished smooth. Mosaic was impervious to water, wind, and sunshine. The modern practice is restricted, though there are fine examples in the dome of S. Paul's Cathedral, in the chapels of Westminster Cathedral and (by Brangwyn) in S. Aidan's church, Leeds. See Art; Byzantine Art; Justinian; S. Mark's.

white flies, leaf hoppers, aphids, beetles, and thrips, in the bodies of which they may persist in an active condition for considerable periods. Consult *Recent Advances in the Study of Plant Viruses*, K. M. Smith, 1933.

**Mosasaurus** (Lat. *Mosa*, the Meuse; Gr. *sauros*, lizard). Extinct marine reptile, so called because

**Mosaic Diseases.** Diseases of plants which result in the mottling or streaking especially of the foliage with yellow, white, or abnormally dark green areas. Additional symptoms such as crinkling, curling, and blistering are common, and necrosis may occur. The diseases are due to the presence of a virus (*q.v.*), which in size is on the borderline of microscopical visibility. Such viruses are known in many instances to be communicated to the plant by insects such as

teaching. His claims to divine inspiration and vocation as a leader of the people were repudiated by Mahomet, and when Mosaylima set up a rival sect, he was killed in battle by Khalid and his sect almost extinguished.

**Moschatel** (*Adoxa moschatellina*). Perennial succulent herb of the family Caprifoliaceae. It is a native of Europe, N. Asia, and N. America. It has a tuberous, creeping rootstock, from which in early spring arise the obscurely four-angled stems, each with only two leaves, which are divided into three-lobed leaflets. The stem ends in a squarish head of five small



**Moschatel.** Foliage and flower head of this succulent herb

green flowers, which have a musky odour, whence the plant derives its name. Juicy, green berries follow.

**Moscheles**, IGNAZ (1794-1870). Bohemian composer and pianist. Born at Prague of Jewish parents,



Ignaz Moscheles,  
Bohemian com-  
poser

May 30, 1794, he studied at the Conservatoire there and in Vienna. During 1826-46 he taught in London, and in 1846 he settled in Leipzig as professor at the new conservatoire. He died there, March 10, 1870. Moscheles played as well as taught the piano, and was a great favourite in London, where he last appeared in 1865.

**Moschus** (2nd century B.C.). Greek poet. Born at Syracuse, he became a pupil of the grammarian Aristarchus of Samothrace at Alexandria. Neither he nor Bion (*q.v.*) is really a bucolic poet, although they are generally so described. Of two extant poems attributed to him one is a mytho-

logical epic on the Carrying off of Europa by Zeus in the form of a bull. The Lament for Bion is now considered to belong to a much later date.

**Moscicki, IGNACE** (1867-1946). Polish president and scientist. Born in Warsaw, he became a professor of electro-chemistry at Lwow in 1912, and organizer of a chemical research institute at Warsaw, 1920. A distinguished scientist with over 600 patents to his credit, he discovered the whirling arc method of recovering nitric acid from free nitrogen. Elected to the Polish diet in 1922, he was a close friend of Pilsudski, and assumed the presidency at the time of Pilsudski's *coup d'état* in 1926, holding it until the fall of Poland in Sept., 1939. He then went with the government to Rumania, where he resigned the presidency. Moving to Switzerland, he died there Oct. 2, 1946.

## MOSCOW: CAPITAL OF THE U.S.S.R.

George Soloveytschik, Author of *Russia in Perspective*

*The history, monuments, and physical characteristics of the ancient city, first capital of Russia and capital again since 1918, are here described. See also Kremlin; Moscow-Volga Canal; Red Square, etc*

Moscow (Russ. *Moskva*), which celebrated its 800th anniversary on Sept. 7, 1947, became the capital of the Union of Soviet Socialist Republics, Dec. 30, 1922, and of the Russian Socialist Federal Soviet Republic, March 11, 1918. It is also Russia's intellectual, artistic, religious, commercial, industrial, and transport metropolis and the headquarters of the All-Russian Communist (Bolshevik) party. It was the seat of the Third (Communist) International (Comintern) from its foundation in March, 1919, to its dissolution in May, 1943. The Lenin mausoleum has made it an ideological and national shrine in a way unprecedented in the country's history.

Like Rome, Moscow lies on seven hills, 500-800 ft. in altitude, of which the best known is the former Sparrow hill, renamed Lenin hill. The city covers a large and almost circular area and is traversed from W. to E. by the winding river Moskva, a trib. of the Oka which flows into the Volga at Gorky (formerly Nijni Novgorod). In 1937 another direct link with the Volga was created through the completion of the Moscow-Volga canal, which not only solved the perennial problem of the city's water supply by replenishing the inadequate stream of the Moskva, but also turned Moscow into an important port for

goods and passenger traffic. The Soviet capital now has direct water routes to the Caspian, the White, and the Baltic seas; a projected canal from Stalingrad to the river Don will provide a connexion with the Black Sea.

The Moscow of today is a curious and in many ways wholly unharmonious mixture of 20th century structures and installations with the quaint old buildings and other characteristic landmarks of the ancient city, which, having established its ascendancy over the other principalities, was the capital of the Great Princes of Muscovy and then of the Russian empire from the 14th century until 1712, when Peter the Great made his new city of St. Petersburg the capital of his Europeanised realm (*see* Leningrad).

Moscow had a pop. (1939) of 4,137,018, twice that of 1926, three times that of 1917. Except for a serious setback in the early days of the Soviet regime, the growth of the pop., which passed the 1,000,000 mark at the turn of the century, has been constant. The city is divided into 23 administrative dists., of which the largest in area is the October dist. while the Kuibishev and the Sverdlov are most densely populated.

The comprehensive general plan for the reconstruction of the city of Moscow, adopted on July 10,

1935, which stipulated that the total pop. of the capital should not be allowed to rise above 5,000,000, was the blueprint which has made Moscow what it is. It laid down that the essential shape of the city, with its concentric semi-circular streets and thoroughfares, should be maintained, but that within the older parts slum clearance and other improvements should be carried out. At the same time, the city's area was gradually to be doubled, the main extensions being planned in the south-western direction beyond the Lenin hill. Huge blocks of flats, clubs, hospitals, and schools, government and administrative buildings, were to be constructed, gardens and squares were to be laid out, and a green belt with a depth of 10 km. (6½ m.) was to be created around it. Moscow's water, gas, and electricity supplies, telephones, street and river traffic, rly. termini, slaughterhouses, cold storage, bakeries, sanitation, health services, etc. were to be completely reorganized.

### The New Moscow

During 1935-37 an imposing proportion of these projects was completed. The first line of Moscow's luxurious underground rly., or Metro., with its marble-halled stations, was opened to traffic in 1935; bus, trolley-bus, and new tramway lines were created; the Moscow-Volga canal and seven new wide bridges over the river Moskva were completed; granite-faced quay-sides along the river with new broad riverside drives were built; new streets and avenues were cut, and old ones were transformed. Okhotny Ryad (Hunters Row), formerly a narrow slum, is now a broad avenue with some of Moscow's most imposing buildings, *e.g.* the house of peoples' commissars and the hotel Moskva. Other outstanding new buildings, spread about the city, include the central theatre of the Red army, the palace of culture, the Lenin library (next to the well-preserved 18th century Pashkov house, where the Rumyantsev museum and public library used to be), the Tchaikovsky concert hall, the office of Pravda, and the Stalinets stadium. Every known style has been tried—from the severely classic to the glass, cement, and metal box style. The most ambitious and at the same time the oddest structure, the Palace of Soviets, will, when completed—including a 328 ft. high statue of Lenin in stainless steel on top of it, 1,365 ft. high—compare with





Moscow. Plan of the central districts of the capital of the U.S.S.R.

the 1,250 ft. of the Empire State building in New York.

The palace of soviets is to occupy the site of the former church of Christ the Saviour, an unattractive monument to the Napoleonic war of 1812, erected in 1837-1883 by the German architect Constantine Thon, and pulled down by the Soviets. Large-scale demolition of many old buildings, as well as the disappearance or renaming of well-known streets and squares, has been the inevitable consequence of this vast reconstruction programme. Thus the famous chapel of the Iberian Mother of God—the most venerated religious shrine in the city—has been demolished and the icon itself moved to the church of the Resurrection, where the election of the present Patriarch, Alexis, also took place in 1946. Moscow used to count some 600 churches. Of these, c. 50 have been reopened for worship; a few particularly precious monuments of Russian architecture have been transformed into museums; a substantial number are used as clubs, schools, libraries, cinemas, or flats; and many have been pulled down.

Most of the new street names are either those of famous Bolsheviks and outstanding events of the Revolution, or of Russia's foremost writers, e.g. Tolstoy, Chekov.

The former Vozdvizhenka Street was renamed Comintern Street, until the Comintern was suspended in 1943, when it became Kalinin Street. Among old street names surviving the best known are Kuznetski Most, Petrovka, Spasskaya, Sretenka, and Tverskoi Boulevard. Moscow's most famous historical landmark, the Kremlin (*q.v.*), has been restored and its ancient treasures cleaned.

#### The Kremlin

Archaeologists have not traced the name Kremlin to any definite source, but it is known that Prince Yury Dolgoruky, who founded the city in 1147, built his first fortification on the present site in 1156, and called it the Kremlin. Ivan I (1328-1341), under whom Moscow became the acknowledged metropolis of the then Russian state, enclosed his city with walls of oak, which were replaced by masonry in 1367, and strengthened by a moat in 1394. At the close of the 15th century, under Ivan III, when the state of Muscovy and its capital were being rapidly expanded and modernised, Italian masters built the new Kremlin fortifications in brick. These walls have survived for the most part to the present, and with their subsequent extensions are 7,280 ft. in circumference, have 18 towers and five gates. Most of the buildings within the Kremlin have survived

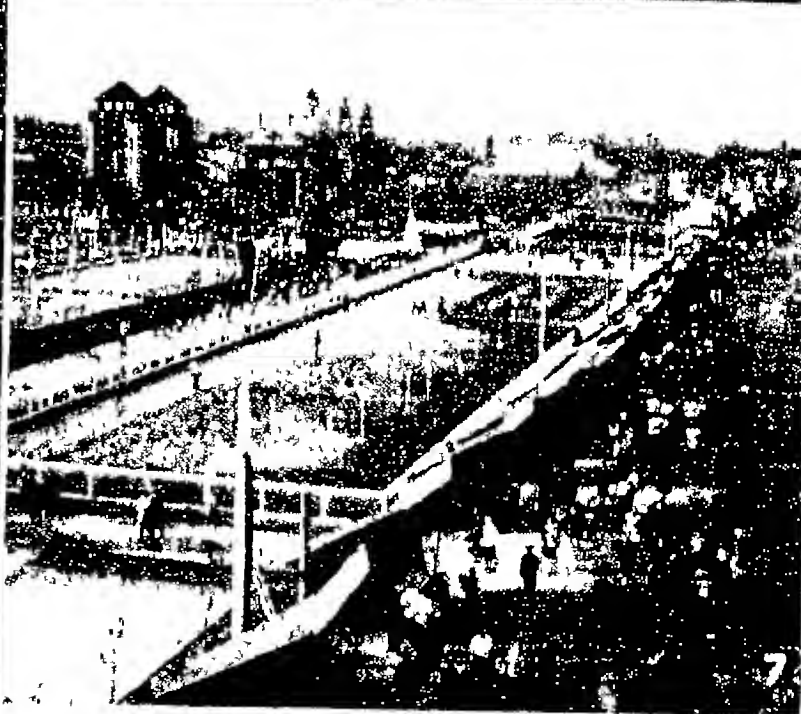
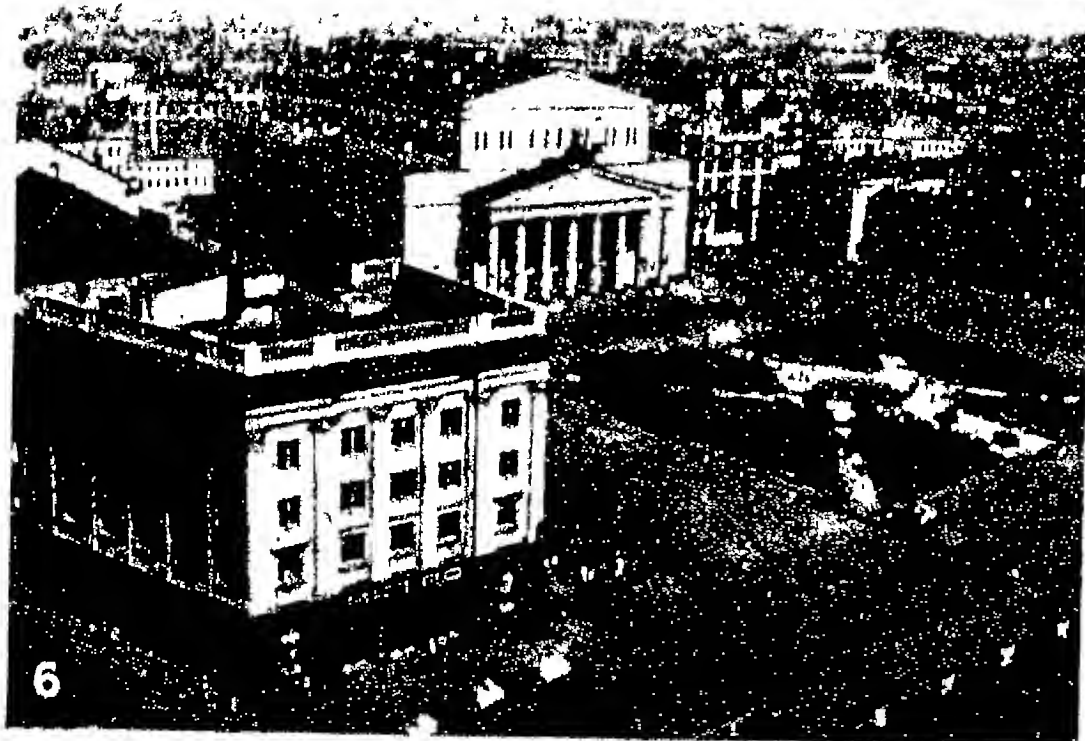
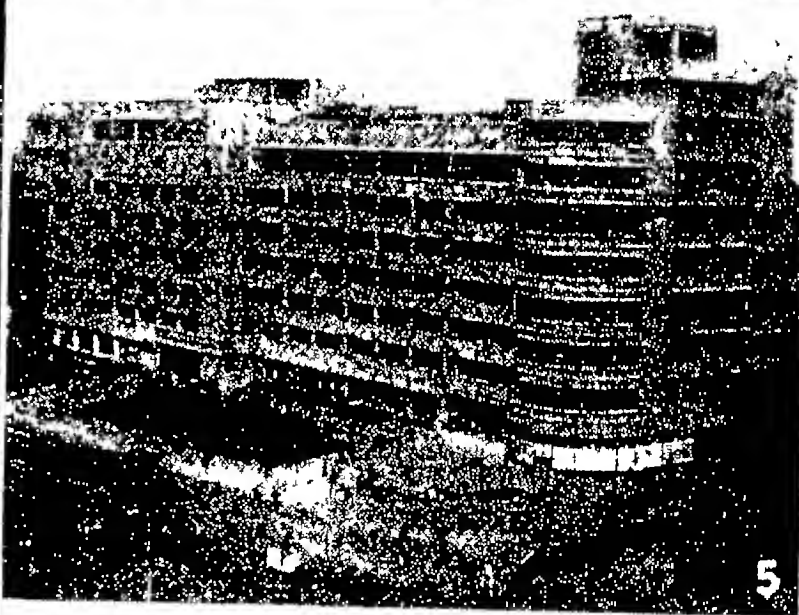
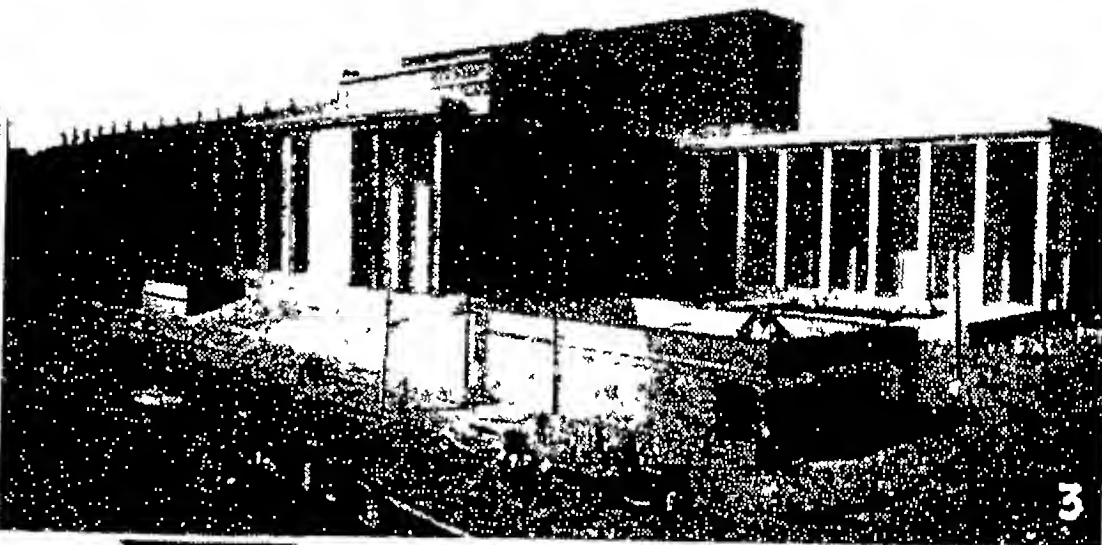
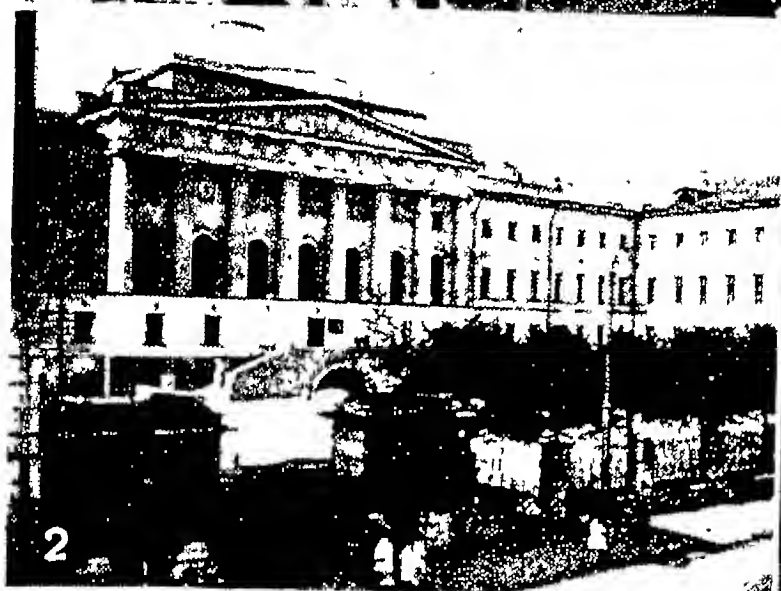
the frequent fires, riots, and foreign invasions which have ravaged the city.

The last occasion when foreign invaders set foot in "the mother of Russian towns" or "the holy city," as Moscow is sometimes called by the Russians, was in 1812 when Napoleon and his troops were there from Sept. 14 to Oct. 10; but then Moscow was deliberately burnt down by her own people; three-quarters of her houses and half the churches were lost in the great conflagration. However, the city was rebuilt with astonishing speed, and much embellished in the process. Towards the end of the 19th century it became Russia's industrial and commercial centre, the wealthiest and the most nationally-conscious city in the realm. Her rich merchants became great patrons of the arts, presented Moscow with museums, libraries, and picture galleries, endowed theatres and institutions of learning, hospitals, and innumerable other foundations. But the rarest art treasure remains the Kremlin itself, wherein the Terem and the Granovitaya Palata, 15th century reception halls of the tsars of Muscovy, are still being used.

Next to the Kremlin, and originally also enclosed by a wall, is a district called, for no discoverable reason, Kitai Gorod (Chinese City), the best-known landmarks of which are the Red square (so called long before the revolution; since 1924 it has contained the Lenin mausoleum) with the picturesque cathedral of Vasily Blashenny (S. Basil the Beati-fied) at its S. end, built in 1554 by the Russian masters Barma and Postnik; the monument to Minin and Posharsky; and the ancestral home of the Romanovs—an instructive illustration of Russian boyar life in the Middle Ages. Embracing the Kremlin and Kitai Gorod (which since c. 1880 has become the business centre of Moscow), and shaped like a shoehorn, is Byely Gorod (White City) and, beyond it, as a still larger semi-circle, Semlyannoy Gorod (Earthen City), while across the river lies the dist. of Samoskvoretchye (beyond the river Moskva). These five ancient dists. constitute the actual city, to which several suburbs have been added.

Here are some memorable dates out of Moscow's history:

1325, the Metropolitan of All Russia made Moscow his official seat. 1404, Moscow had its first striking clock. 1564, Moscow had



1. Red Square : in the middle distance is the cathedral of S. Basil, founded by Ivan the Terrible, 1554. 2. The University. 3. Lenin Library. 4. Komсомol Square, showing October railway station on left, the underground station next to it, and Northern railway station on right ; in right foreground is seen a corner

of Kazan railway station. 5. The great Palace of the People's Commissariat of Health. 6. Sverdlov Square with Ochotny Ryad underground railway station in left foreground, and Bolshoi Theatre in centre. 7. Gorki Park of Rest and Culture ; it has cinemas, library, restaurant, billiards rooms, sports grounds, etc.

# **MOSCOW : VIEWS AND BUILDINGS IN THE CAPITAL OF THE U.S.S.R.**



its first printing press. 1589, first Patriarch elected (lapsed 1700, restored 1917 and 1943) 1613, first Romanov (Michael) elected Tsar. 1689, first stone bridge built 1703, first newspaper in Russia. 1755, first university in Russia, inaugurated Jan. 12, day of S. Tatiana, who became its patron saint. 1812, occupation by Napoleon and Great Fire of Moscow. 1824, Bolshoi (Great) Imperial Theatre of Opera and Ballet built. 1838-49, great Kremlin palace rebuilt on ancient foundations. 1851, Moscow joined to St. Petersburg by rly., the second in Russia. 1861, liberation of the peasant serfs, which completely transformed Moscow's economic position. 1861, Rumyantsev museum and library moved to Moscow from St. Petersburg. 1892, the brothers Tretyakov, wealthy Moscow merchants, presented to the city their unique picture gallery of Russian masters. 1898, Moscow Arts Theatre, world famous dramatic company, founded by Stanislavsky and Nemirovitch-Dantchenko. 1905, violent risings during the revolution. 1918, Lenin moved the capital to Moscow.

**Moscow Declaration.** Signed in Moscow by representatives of the U.K., U.S.A., U.S.S.R. and China, Oct., 1943, this recognized "the necessity of establishing at the earliest practicable date a general international organization, based on the principle of the sovereign equality of all peace-loving states and open to membership by all such states for the maintenance of international peace and security." See United Nations.

**Moscow Trials.** Name used to describe certain trials held in Moscow in 1933, 1936, and 1937. In March, 1933, six British employees of Metropolitan-Vickers, M. Monkhouse, W. H. Thornton, J. Cushny, W. H. MacDonald, C. Nordwell, and A. Gregory, were arrested by the Russian secret police and committed to prison charged with unspecified acts of sabotage in connexion with electrical works being carried out under contract in Russia by their firm. Following unsuccessful representations for their release to the Kremlin by the British embassy in Moscow, the British govt. broke off current negotiations for a new Anglo-Soviet trade agreement, and on April 5 brought in a bill to impose an embargo on Russian imports into Great Britain.

On April 12, the Britons were brought to trial, and all pleaded not guilty except MacDonald, who, however, during the first day's hearing retracted his plea of guilty, but after an interview with the O.G.P.U. guards again

pleaded guilty. The prosecution then put in an alleged confession by Thornton, which the latter disowned as having been extracted under moral pressure. On April 18, the court sentenced Thornton to three years', MacDonald to two years' imprisonment; Monkhouse, Cushny, and Nordwell to deportation. Gregory was acquitted. Mutual embargoes on trade were enforced by the British and Russian govts.; but negotiations between Litvinov and Sir John Simon led to the release of the British prisoners on July 1, and their deportation. Both countries lifted their import embargoes preparatory to negotiating a fresh trade treaty.

In August, 1936, a group of Communists, including Kameniev and Zinoviev, ex-chairman of the Communist International, were arrested and tried in Moscow on a charge of assisting the exiled Trotsky to negotiate with Germany for help against Stalin in return for the cession of the Ukraine. Although the prosecution was unable to bring evidence substantiating the charges, the prisoners, who had vied with each other in confessing their alleged misdeeds, pleaded guilty and were executed. In Feb., 1937, a second group of 17 Communists, called the Trotskyite-and-Right-Wing Bloc, were tried on similar charges: 14 were sentenced to death. Three months later eight high-ranking officers of the Soviet army, arrested and tried in camera on charges of conspiring with the German general staff, were shot.

**Moscow-Volga Canal.** Artificial waterway of the R.S.F.S.R., 80 m. in length. Started in 1933 under the second five year plan, it was opened to traffic May 2, 1937. It connects the Volga and Moskva rivers, so that shipping from the Caspian, Baltic, and White seas can reach Moscow.

There are 11 locks for the raising and lowering of ships in transit, while 11 dams increased the depth of the Moskva river and tributaries, previously scarcely navigable. The reservoir formed by the dams increased Moscow's water supply by 50 galls. daily per head of pop., while the overflow drives 8 generating stations. To make way for the canal the inhabitants of 203 settlements with 40,000 buildings on the route, were moved to new centres.

**Moseley.** Suburb of Birmingham, England. It comprises the ecclesiastical districts of St. Anne and St. Mary in the S. of the city.

**Moseley, HENRY GWYN JEFFREYS** (1887-1915). British physicist. Born in 1887, he was educated at Eton and Trinity College, Oxford. Appointed a lecturer in Rutherford's laboratory at Manchester university, he later became a John Harling fellow there before going to Oxford. His work in radio-activity resulted in a series of brilliant researches proving the existence of a single relationship between the X-ray spectrum of an element and its atomic number. This established a new and valuable method of chemical analysis which solved the outstanding problems of atomic structure and spectral lines. Moseley was killed in action in Gallipoli, Aug 10, 1915, while serving with the Royal Engineers.

**Moselle.** Delicate, aromatic wine, generally of the white variety. It has a low percentage of alcohol, and is made from grapes grown in the lower valley of the Moselle. Unlike most wines, Moselle does not improve by keeping. It is either still or sparkling. The latter is distinguished by a pronounced grape flavour, and is one of the lightest of effervescing wines.

**Moselle** or **MOSEL**. River of France and Germany. It rises in the S. Vosges, near Bussang, and flows in a N.W. direction into Lorraine. At Toul it turns N., skirts Luxemburg, and passes into Germany, following a winding course to the N.E. until it reaches the Rhine at Coblenz. Its chief tributaries are the Vologne, Meurthe, Seille, Orne, Sarre, and Kyll, and the chief towns on its banks are Remiremont, Épinal, Toul, Pont-à-Mousson, Metz, Thionville, Trèves, Berncastel, Cochem, and Coblenz. Its length is 320 m.

**Moselle.** Dept. of N.E. France. It is bounded N. and N.E. by Luxemburg and Germany, E. and S.E. by Bas-Rhin, S. and W. by Meurthe-et-Moselle, and consists chiefly of a low plateau drained by the river Moselle. There are important coal and iron mines, and the chief industries include salt working, metal founding, and cement making. Manufactures include machinery, chemical products, textiles, boots and shoes, pipes, and paper. The Moselle valley is famous for vineyards. The dept. has 9 arrondissements, 36 cantons, and 763 communes. Metz is the capital. Moselle is coterminous with that part of the old province of Lorraine ceded by France to Germany in 1871 and restored in 1919. Area 2,403 sq. m. Pop. (1954) 769,388.

**Moses.** Hebrew law-giver and leader of the Israelites from Egypt. Son of Amram, a Levite, and Jochebed, and younger brother of



Moses. Sculpture representing the law-giver of Israel, by Michelangelo Church of S. Pietro in Vincoli, Rome

Miriam and Aaron, he was adopted by Pharaoh's daughter, and brought up as an Egyptian prince. According to the Biblical narrative (Exodus-Deut.), after slaying an Egyptian taskmaster who had ill-treated an Israelite, he fled to Midian, and married Zipporah, daughter of Jethro, a shepherd. At Mt. Horeb he received a Divine command to return to Egypt, from which he later led the Israelites to the confines of Canaan, receiving the Decalogue from Jahveh, at Mt. Sinai. After glimpsing the Promised Land from Pisgah, he died at the age of 120 years, leaving two sons, Gershom and Eliezer. He was buried in an unknown grave.

By a late Jewish tradition, Moses was thought to be the author of the Pentateuch, a work now usually regarded as the product of several compilers from older documents, only parts of it being definitely ascribed to Moses. Moses figures largely in the Koran, in Islamic legend, and in the pages of Josephus. See Aaron; Decalogue; Exodus; Pentateuch.

**Bibliography.** The Story of Moses and Joshua, J. Telford, 1893; Encyclopaedia Biblica, T. K. Cheyne, 1899-1903; Lives, H. L. Taylor, 1913; E. Fleg, 1938; E. L. G. Watson, 1929; Martin Buber, 1947; Moses and Monotheism, S. Freud, 1939.

**Mosheim, JOHANN LORENZ VON** (1694-1755). German historian. He was born at Lübeck, Oct. 9, 1694, and became professor of theology at Helmstedt, Brunswick, in 1723. In 1747 he was appointed

professor of divinity and chancellor of Gottingen university. He died Sept. 9, 1755. His *Institutiones Historiae Ecclesiasticae*, 1726, the work which established his fame, was translated into English by A. Maclaine, 1764, and again in 1832, by J. Murdock (new edition, 1892).

**Moskva.** River of central Russia, a tributary of the Oka. It rises in the Moscow region, flowing E. and then S.E., joining the Oka below Kolomna, after a course of 300 m. The battle between the French and the Russians, called the battle of Borodino (*q.v.*) was fought along it, Sept. 7, 1812.

**Moslem.** The spelling favoured in this Encyclopedia is Muslim. See Mahomedanism; Muslim League.

**Mosley, SIR OSWALD ERNALD** (b. 1896). British politician. Born Nov. 16, 1896, son of Sir Oswald Mosley, Bart., to whose title he succeeded in 1928, he was educated at Winchester and Sandhurst and commissioned in the 16th Lancers. In 1918 he was Conservative M.P. for Har-



Sir Oswald Mosley, British politician

row, but left the party and sat as an Independent, 1922-24. In 1924 he joined the Labour party. Defeated at the 1924 general election, he became M.P. for Smethwick, 1926, and was chancellor of the duchy of Lancaster, 1929-30. In the latter year, contemptuous of what he considered the "spineless apathy" of the Socialists, he founded the New party; but was defeated at the general election of 1931, as was every New party candidate; and, when it became clear that he was increasingly inclining towards fascism, the party broke up. Almost at once he formed the British Union of Fascists. He visited Italy to study fascism at first hand, and adopted as his own much of the Italian party's manners and methods, *e.g.* a black-shirted uniform. Mosley's policy included a virulent anti-Semitism, and his supporters earned notoriety for their violent and provocative actions. He opposed the waging of war against Germany in 1939, and in May, 1940, he was arrested under the Defence Regulations and imprisoned first in Brixton jail, and from 1941, with his wife, in Holloway jail, until his release in Nov., 1943, on the grounds of health; he was suffering from thrombo-phlebitis. After the war

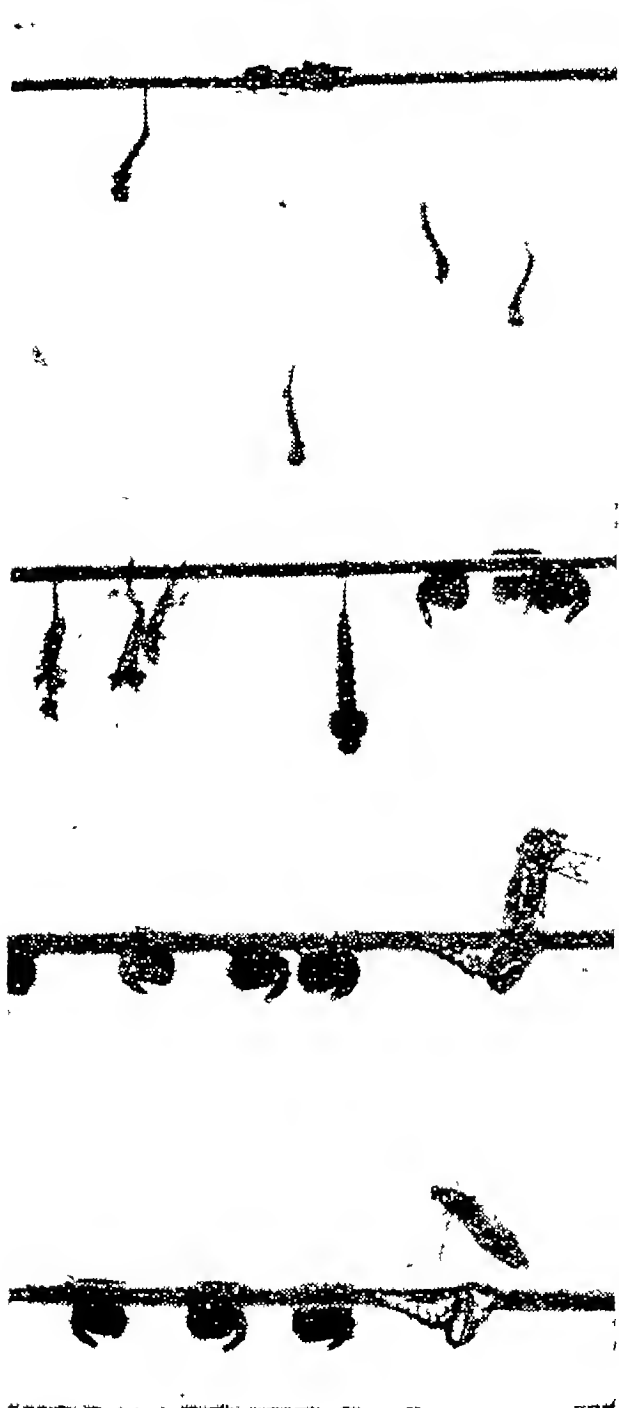
he founded Mosley Publications Ltd. as a basis for further political activity, but, discredited in the eyes of the public, he gained no considerable support. His book *My Answer*, 1946, formulated his later political ideas, and in Feb., 1948, he announced the formation of a new Union movement, designed to unite 51 organizations.

Mosley married, in 1920, Lady Cynthia Blanche Curzon (1898-1933), the daughter of Lord Curzon of Kedleston. She was Labour M.P. for Stoke in 1929, and followed her husband when he formed the New party. She died May 16, 1933. In 1936 Mosley married the Hon. Diana Guinness, a daughter of the 2nd Baron Redesdale (*q.v.*).

**Mosque** (Arabic, *mesjid*). Mahomedan place of worship. Noteworthy examples are at Cairo, Delhi, Mecca, Medina, Jerusalem, Damascus, and in various parts of India. In the U.K. there are mosques at Woking, Surrey; Southfields, London; and Cardiff. Varying in form in different countries, mosques generally have a central dome, minarets, and a court provided with a tank for ceremonial ablutions. Within is a pulpit, a lectern, a niche indicating the direction of Mecca, and carpets, but no seats. The interior decoration is restricted to arabesques and texts from the Koran. See Arabia; Cairo; Damascus; Delhi; Mahomedan Art and Architecture.

**Mosquito** (Span. diminutive of *mosca*, a fly). Name given to species of blood-sucking flies of the family Culicidae or gnats. They closely resemble midges (*q.v.*) in appearance but are distinguished by their piercing mouth-parts and the presence of scales on the body, wings, and other appendages. In their early stages they are aquatic, usually in fresh water, and less often in saline or brackish waters. The eggs float, either singly as in *Anopheles*, or in compact masses or rafts as in *Culex*. Mosquitoes occur all over the world but are most abundant in the tropics. About 2,000 species are known, and of these 29 kinds occur in Great Britain. The blood-sucking habit is confined to the females, the males largely feeding on plant juices. Many species of *Anopheles* act as carriers of the pathogenic organism causing malaria and in Europe *Anopheles maculipennis* is of great importance in this. The malarial parasite is conveyed to the female mosquito when she sucks the blood of an infected person. The parasite finds its way into the walls of the insect's stomach where





Mosquito. Stages in development. 1. Egg-rafts and half grown mosquito larvae diving. 2. Full grown larvae breathing at surface of water. Moulded larvae skins on left, active pupae on right. 3. Mosquito emerging from pupa skin on surface of water. 4. Mosquito fully emerged and ready for flight

it multiplies, forming large cysts. The latter rupture, and liberate the parasites into the body-cavity. They then make their way to the salivary glands. When a mosquito punctures the skin the parasites enter the blood with the saliva, infecting a person with malaria.

Other species of mosquito, in special *Aedes aegypti*, are carriers of the virus of yellow fever from infected to uninfected persons. The disease of elephantiasis is due to minute filarial worms disseminated by the mosquito and particularly by the species *Culex fatigans*. Various measures for controlling mosquitoes are practised. The elimination of standing water and the drainage of marshes destroy breeding places. The spraying of ponds and ditches with kerosene, or oil mixtures, which spread as a thin film, kill the larvae when they come to the surface to breathe. Larger areas, when dusted with finely powdered arsenical compounds discharged from aeroplanes, become freed of mosquitoes. The introduction of fishes known to feed on mosquito larvae is a further

measure. See Malaria: Yellow Fever. Consult British Mosquitoes, J. F. Marshall, 1938; Insects of Medical Importance, Smart, 1943.

**Mosquito.** Type of military aeroplane designed by the De Havilland Aircraft Co., Ltd., as the D.H.98 for service with the R.A.F. in the Second Great War. Originally an unarmed high-speed light bomber, it was later used as a night fighter, fighter-bomber, and photographic reconnaissance machine. A modified type was employed for transport and as the Sea Mosquito for naval work. The basic structure was entirely of wood, for ease of manufacture; furniture-makers and other sub-contractors were introduced to step up production, and by the end of hostilities over 8,000 Mosquitoes had been delivered. Despite its size (wing span 54 ft. 2 ins., crew of two), the Mosquito was the first standard R.A.F. type to have a maximum speed of over 400 m.p.h. The final operational version (Mark 34), powered by two 1,625 h.p. Rolls-Royce Merlin engines, had a maximum speed of 425 m.p.h. and an extreme range of 3,500 miles. See Aeroplane illus., p. 129.

**Mosquito** (native form, *Misskito*). Tribe of Central American Indians. They inhabit the E. coast of Nicaragua, thence known as the Mosquito Coast. They are exceptionally intelligent, and speak a Sumo dialect. Their dark colour is attributed to intermarriage with shipwrecked negro slaves.

**Mosquito Coast** or LA MOSQUITIA. Maritime region of Central America. It embraces the S.E. coast of Honduras, and the E. coast of Nicaragua. It fronts the Caribbean Sea, is low lying, and contains several lagoons, the largest being Caratas-ka in Honduras and Pearl Cay in Nicaragua.

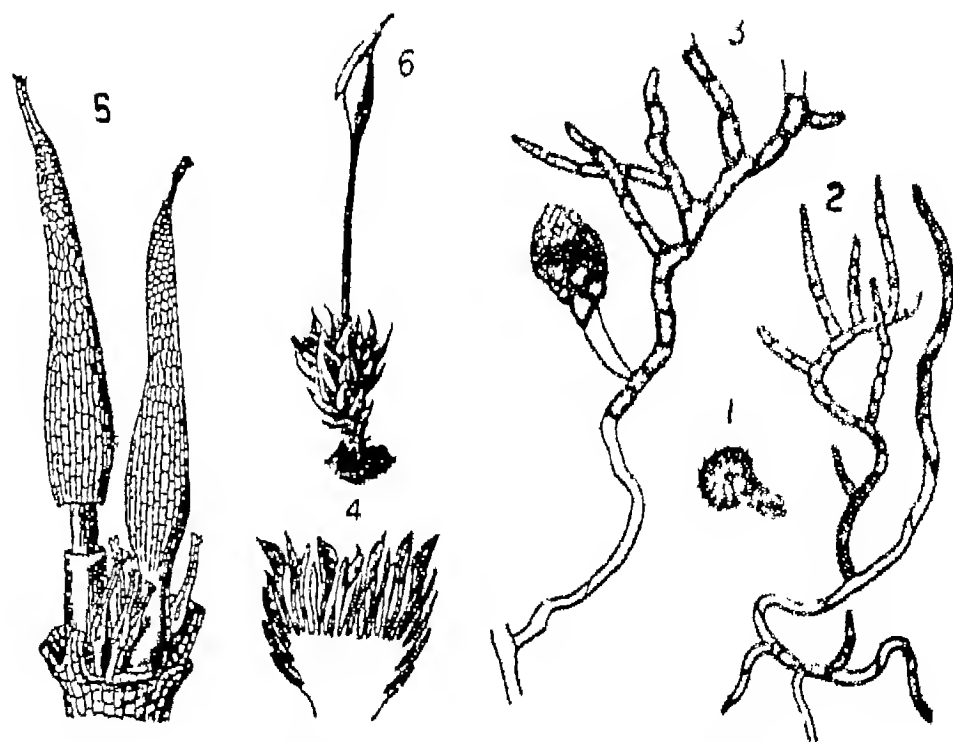
The Mosquito Territory or Reserve, wholly in the latter republic, now forms the dept. of Bluefields. It is inhabited chiefly by Mosquito and Zambo Indians, with negroes from Jamaica. The region was a matter of diplomatic controversy between the U.S.A. and Gt. Britain, but under the

treaty of April 19, 1905, the U.S.A. acknowledged the claim of Nicaragua, and withdrew.

**Moss** (*Musci*). One of the two classes of Bryophyta, the other class being the Hepaticae. Bryophyta come in systematic botany between Thallophytes and Pteridophytes. Like Thallophytes (algae, fungi, diatoms, etc.), their structure is simple, there being neither vessels nor woody tissue, though they have conducting cells which to some extent serve the purpose of vessels. They have stems, which are clothed with simple leaves which differ essentially in form and internal structure from the foliar organs of the flowering plants.

Mosses are reproduced by spores which are contained in an urn-like capsule produced by a sexual process. We have thus an alternation of generations as in the ferns, but with the difference that the asexual generation (spore capsule) grows on the sexual. The sexual elements are contained in what are popularly styled the "flowers" of the moss—technically the perichaetium. This is formed at the apex of the stem, and consists of mere crowded whorls of "leaves" enclosing either the male or the female elements, or both in the same flower. The male flowers contain antheridia, the females archegonia.

The antheridia consist of a number of cells, each containing a coiled-up antherozoid which makes its way through a mucilage accompanying its liberation to the archegonium, and fertilises the contained ovum. The latter ultimately develops into a capsule filled with dust-like spores and covered with a



Moss. 1. Germinating spore. 2. Moss-protonema. 3. Protonema which gives rise to a bud developing into leafy moss-shoot. 4. Longitudinal section of tip of male shoot. 5. Tips of female shoot with archegonia, two of which are enlarged to show the calyptra or caps which are thrown off when the spores are ripe. 6. Leafy female shoot with fully developed capsule. All highly magnified. From Kerner's Natural History of Plants (Blackie)

cap (calyptra), thrown off when the spores are ripe. The spore-capsule is then seen to have a distinct lid, and when this falls off the spores are protected in certain orders by a peristome—a series of long hygroscopic teeth. These open out in a dry atmosphere to liberate the spores, and close down in damp to keep them dry. There are variations of this mechanism in different orders of mosses. The spore on germination produces a hair-like thread which branches, and develops buds which grow into leafy stems—the moss-plant. Mosses are ubiquitous, growing even on bare rock and brick wall, preparing the way for higher vegetation by forming a humus of their dead bodies and the minute particles of organic matter which every tuft of moss collects from the air.

**Moss.** Seaport of Norway, in the co. of Akershus. It stands on a small bay of Oslo Fiord, 33 m. due S. of the capital. There are extensive iron mines in the vicinity, and a quantity of timber is exported. The act of union between Norway and Sweden was signed here Aug. 14, 1814. Pop. (1955 est.) 19,250.

**Mossamedes** OR MOÇAMEDES. Port of Angola, Africa. Situated on Little Fish Bay, it is a centre for fishing and whaling and has whale oil refineries. A rly. links it with Lubango, in the fertile uplands beyond the precipitous Chella Range. (Pop. est.) 5,000.

**Mossel Bay.** Seaport of Cape Province, S. Africa. It lies 318 m. by rly. E. of Cape Town, almost midway between that city and Port Elizabeth. Diaz touched the bay in 1487, Vasco da Gama in 1497. The town has good sea bathing and is a popular resort. Pop. (1951) 11,237, of whom 5,072 were white.

**Mossley.** Mun. bor. of Lancashire, England. It stands on the Tame, 10 m. E.N.E. of Manchester by rly. It is also served by the Huddersfield canal. The industries include cotton and woollen mills, also engineering works. Mossley became a borough in 1885. Near the town are some British remains known as Bucton Castle. Market day, Thurs. Pop. (1951) 10,415. Mossley Hill is a suburb of Liverpool, with a rly. station.

**Mossop,** HENRY (c. 1729–c. 1774). Irish actor. Son of the Rev. John Mossop, he was educated at Trinity College, Dublin, but his tastes led him to the stage. In 1749 he made his first appearance in Dublin, and in 1751 in London

as Richard III, under the patronage of Garrick. After a few successful years he quarrelled with Garrick, and in 1759 returned to Dublin where he opened a theatre of his own. There, as in London, he had many successes, but financially his theatre was a failure, and he became bankrupt in 1771. He was some time in prison for debt.

**Moss Side.** Suburb of Manchester, England. It comprises the eccles. dist. of S. James and Christ Church, and gives its name to a bor. constituency of the city.

**Moss Trooper.** Name given in Scotland to the marauders and cattle thieves who in the 17th century infested the border and frequently carried out raids on towns and villages of Northumberland. Moss troopers figure in S. R. Crockett's novel *The Men of the Moss Hag*.

**Most** (Ger. Brüx). Town of Czecho-Slovakia, on the river Biela. 83 m. by rly. N.W. of Prague, at the centre of the principal lignite coal-field in the country. There are also sugar, distilling, and machine making industries. The famous Seidlitz mineral springs are in the vicinity. The town is in that part of Sudetenland ceded to Germany in 1938 and recovered by Czecho-Slovakia after the Second Great War. Pop. (1956 est.) 33,570.

**Mostaganem.** Small seaport of Algeria. It stands between Oran and Algiers, and is directly connected by rly. with Oran. It is identified with the Portus Magnus of the Romans. The harbour is exposed. Lucerne is the chief export. Pop. (1954) 60,186.

**Mostar.** Town of Yugoslavia, in Herzegovina. It stands on the Narenta, in a narrow valley within a district of great fertility, 47 m. S.W. of Sarajevo. Many of the modern buildings are Italian in character, although the town is predominantly Turkish. There are many mosques and a fine Greek cathedral. Mostar has been the seat of Greek and R.C. bishoprics. Tobacco is manufactured. Pop. (1953) 31,608.

**Most Favoured Nation Clause.** In commercial treaties, a clause granting preferential treatment to particular countries in regard to duties imposed on goods imported from those countries. Such preference is frequently conditional upon reciprocal treatment.

**Most Honourable.** Courtesy title used in the U.K. *See under* Honourable.

**Most Noble.** Courtesy title borne by dukes in the U.K.

**Mosul** OR MOSSUL. City of Iraq, capital of a vilayet of the same name. It stands on the Tigris, about 220 m. N. of Bagdad. Opposite it, on the E. side of the river, are the vast mounds which are the remains of Nineveh. It is the seat of a patriarch of the Chaldean Catholics. It once was famous for its muslin, the name being



Mosul, Iraq. Street scene in the bazaar of the city

derived from that of the town. From it an important caravan road leads through Rovanduz into N.W. Persia.

There are oilfields in the vilayet, and a concession to work them was granted to a British company before the First Great War. By a decision of the Allies at San Remo in 1920, the validity of this concession was upheld, and the French government were allotted the former German interests in the British company. Before and during the war Mosul was the headquarters of a Turkish army corps, and after the granting by the Allies of the armistice to Turkey in Oct., 1918, it was occupied by the British. The claim of Turkey to the vilayet or province of Mosul was the subject of a conference held at Istanbul in May–June, 1924, between Great Britain and Turkey. This conference proved abortive, and the question was referred to the League of Nations, which sent a committee to the Mosul district to study and report upon the conditions. The League decided that it should be part of Iraq and in 1926 the boundary was fixed in accordance with this decision. A neutral zone was established for 50 miles on each side. Turkey obtained for 25 years a royalty of 10



per cent of the oil revenues of Iraq. During the Iraqi rebellion in 1941, German aircraft arrived at Mosul on May 15 and were bombed at intervals by the R.A.F. until the rising collapsed on May 30. Mosul was occupied by British troops on June 3, 1941. Pop. vilayet, 602,000; city, 80,000.

**Moszkowski, Moritz** (1854-1925). Polish composer. Born at Breslau, Aug. 23, 1854, he studied at Dresden and Berlin, and, after a successful career as pianist and composer, he settled in Paris in 1897. His works included two books of Spanish dances for the piano, a violin concerto, two orchestral suites, a symphony, and many songs. An opera *Boabdil* was produced at Berlin in 1892, and a ballet *Laurin* in 1896. He frequently appeared in London as pianist and conductor, his final appearance being in 1908 at Queen's Hall when he conducted a programme of his own works. He died in Paris, March 8, 1925.

**Motala.** Town of Sweden, in the län or co. of Östergötland. It is on the E. shore of Lake Wetter, 42 m. W.S.W. of Norrköping. The river Motala enters the lake close to the town. Pop. 5,985.

**Motet.** Vocal music in the contrapuntal style. Formerly it was set to either secular or sacred words, but since the beginning of the 14th century it has been exclusively reserved for the latter, and employed in the service of the Church. Its best period was from about 1500 to 1600, contemporary with the golden age of its secular counterpart, the madrigal. The best composers of that century produced both kinds. More modern compositions by Haydn, Mozart, Cherubini, Mendelssohn, and others, which bear the name, have little in common with the true motet style, and may be regarded rather as anthems or short sacred cantatas. See Counterpoint.

**Moth.** Class of insects forming the greater number of the order Lepidoptera. They are distinguished from the butterflies (*q.v.*) by the following characters. In butterflies the antennae end in a club or knob, whereas in moths the antennae are without a knob at the extremity. The wings of moths usually bear an interlocking mechanism absent in butterflies. This consists of a long bristle, or group of bristles, borne on the base of the hind wing, which become engaged in a hook-like "catch" on the under side of the fore wing. Too much stress has been laid in the past on the distinctions be-

tween butterflies and moths, resulting in their separation into two sub-orders—the *Rhopalocera* and *Heterocera* respectively. It is now recognized that butterflies form only one superfamily (*Papilionoidea*) among the several that constitute the order Lepidoptera, the remainder comprising the moths. Many moths resemble butterflies in being diurnal and some are equally magnificent in brilliancy of coloration and even larger in size. The giant atlas moths of India have a wing-spread of nearly a foot, and the *Erebus* of America equals or exceeds that dimension. More than 2,000 species of moths are found in the British Isles. The largest is the death's head hawk moth with a wing-spread of 5½ ins. and the smallest are minute creatures of the genus *Nepticula* with a wing-expanse often not exceeding 3 mm. In many species the individuals of the two sexes are very different; thus the male of the drinker moth and emperor moth is smaller than the female and more deeply coloured: also the antennae are comb-like in the male sex and simple in the female. In several cases, including the whiter moth and March moth, the females are either wingless or have those organs reduced to vestiges. Moths include many kinds of which the caterpillars are injurious to human welfare. Thus the caterpillars of the goat moth and wood leopard moth damage the wood of living trees. Those of the swift moths destroy the roots of plants. Those of the cabbage moth attack vegetables; and the European corn borer causes great damage to maize, etc. The caterpillars of the codling moth, lackey moth, and winter moth are highly destructive to fruit-trees. In contrast, the caterpillar of the silkworm moth yields the silk of commerce. Also, the caterpillars of certain of the Saturniid moths yield "eri," "tossar," and "muga" silk. Certain other moths have caterpillars which attack noxious plants. The most famous is the *Cactoblastis*, a small moth introduced into Australia where its caterpillars are the main agents controlling prickly pear in that country. See colour plates facing pp. 5880-81; consult *Larvae of British Butterflies and Moths*, W. Buckler, 1885-1895; *Revised Handbook of British Lepidoptera*, R. Meyrick, 1938; *Moths of the British Isles*, R. South, 1939.

**Moth.** Light aeroplane designed by the De Havilland Aircraft co., Ltd. The D.H.60, with an 80 h.p.

Cirrus engine, was designed in 1925, and for the first time made club and private flying in Great Britain a practical proposition. Famous record flights with this type (later with the more powerful D.H. Gipsy engine) included that of Amy Johnson (*q.v.*). Progressively developed over the next 20 years there were many other successful Moth designs, some of them monoplanes, but the original two-seat open-cockpit biplane was perpetuated in the D.H. 82 Tiger Moth, a standard primary trainer of the R.A.F. throughout the Second Great War.

**Mother.** Word common, like father, to most Indo-European languages, the form varying in accordance with phonetic laws. It denotes the female parent. The mother-child relationship, like that of the father and child, has been adapted to religious ideas, many religions including a mother goddess concept. In English law the mother had no rights over her legitimate children until an Act of 1839, and did not acquire equal rights of guardianship with the father until the Infants Custody Act of 1925.

On the death of the father the mother is natural guardian of the children of the marriage and may act jointly with any guardian appointed by the father. She may also appoint a guardian to act jointly with the father after her death. The court may remove her from guardianship. During the marriage or on divorce the court has also power to give the mother the custody of the children if that is in their interests. A mother may be required under the poor law to maintain her child. If a person dies intestate and without issue the mother and father are entitled to succeed to the estate subject to the rights of the wife (or husband). If an illegitimate person dies intestate and without issue the mother succeeds to all the estate subject to the rights of the deceased person's wife (or husband).

**Mother Carey's Chickens.** Name given by sailors to the stormy or storm petrel (*Thalasidroma pelagica*). Mother Carey is a corruption of *mater cara* or dear mother, meaning the Virgin Mary. French sailors call these birds *oiseaux de Notre Dame* or birds of Our Lady. They are supposed to give warning to sailors of an approaching storm, and it is regarded as very unlucky to kill one. The legend is that each bird contains the soul of a dead seaman.

**Mothering Sunday.** Name given in England to the fourth Sunday in Lent. According to an ancient custom, apprentices were enabled on that day to go home to visit their mothers, bringing them a small present of flowers or the like. The custom is still observed in many parts of the country. Refreshment Sunday falls on the same day. See Sunday.

**Mother-of-Pearl.** Inner layer of the shells of many bivalve molluscs, including pearl oysters. It possesses some resemblance to pearls, and has much the same composition. On account of its beautiful iridescence and its high polish, mother-of-pearl is used in thin sheets to decorate articles of ornament and for the toilet, knife handles, and jewelry. Though mostly derived from bivalves of the torrid zones, a good variety is obtained from pearl mussels in the Mediterranean Sea.

**Mother of Thousands.** Popular name applied equally to *Saxifraga sarmentosa* and *Linaria cymbalaria*. The first named, also known as creeping sailor and wandering Jew, is a native of China and Japan, with roundish, lobed leaves, which sends out long pink runners giving rise to young plants at frequent intervals. The flowers are white with a few spots of yellow and red. *Linaria cymbalaria* is a much smaller plant,



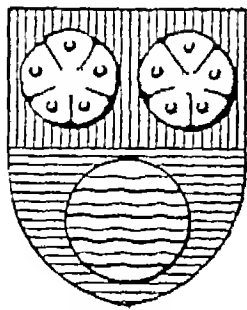
Mother of Thousands. Spray of leaves and flowers of *Linaria cymbalaria*

a native of Europe, rooting in the crevices of rocks and old walls. Its glossy leaves are ivy-shaped, and its spurred flowers are lilac. It is also called ivy-leaved toadflax.

**Mother's Day.** Day set aside in the U.S.A. in honour of motherhood. The idea was conceived by Miss Anna Jarvis, of Philadelphia, who coined the slogan: "In honour of the best mother that ever lived—your mother." On May 10, 1913, a resolution was passed by the senate and house of representatives, to make the second Sunday in May a public holiday in honour of motherhood. On that day Americans give a present to their mothers.

**Motherwell and Wishaw.** A police burgh of Lanarkshire, Scot-

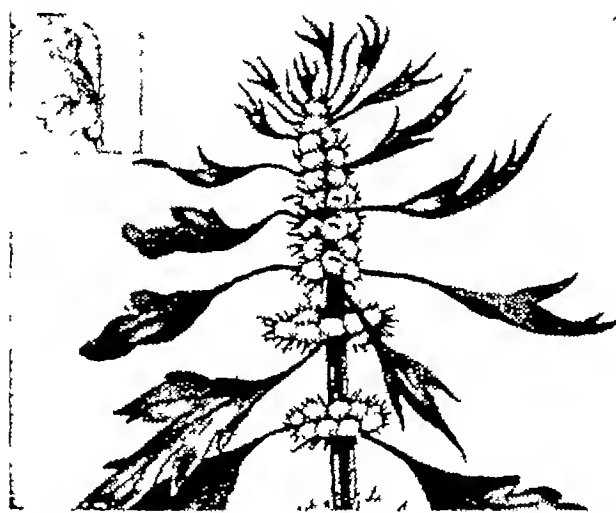
land. The two formerly separate burghs were united in 1920. Motherwell lies N.E. of the river Clyde, which it touches on the S.W., 13 m. S.E. of Glasgow and 2 m. from Hamilton. It owes its growth to its situation on the great Lanarkshire coal-field, though local



Motherwell and Wishaw arms

collieries are almost worked out; there are large iron and steel and engineering works; boilers, bridges, railway rolling stock, clocks, and electrical equipment are among its products. Motherwell gives its name to a county constituency of Lanarkshire. Pop. (1951) 68,154.

**Motherwort** (*Leonurus cardiaca*). Perennial herb of the family Labiatae. A native of Europe and N. and W. Asia, it has a stout rootstock, and erect, four-angled, leafy stems. The opposite leaves are deeply cut into



Motherwort. Foliage and flower whorls. Inset, single flower

five or seven lobes, and the rosy-pink flowers are arranged in a series of whorls, which convert the upper part of the stem into a long leafy flower-spike. The whole plant is downy.

**Moth-flies.** Name given to minute moth-like flies, the body and wings of which are densely clothed with hairs, forming the family Psychodidae. About 70 species are British, some of which are often seen on window panes. In warm countries the species of *Phlebotomus*, or sand-flies, are troublesome owing to the blood-sucking habits of the females. *P. argentipes* and *P. chinensis* are known to transmit the disease of kala-azar in India and China, while other species are carriers of the virus of sand-fly fever in S. Europe and elsewhere.

**Moth Orchid** (*Phalaenopsis*). Genus of epiphytes of the family Orchidaceae, natives of the Malay Archipelago and Eastern India. They have no pseudo-bulbs, but have permanent short leafy stems,



Moth Orchid. Flower sprays of a hybrid form

and the broad leathery leaves are in two ranks. The large showy flowers form a loose spray. They are supposed to bear some resemblance to moths on the wing. A beautiful species is *P. schilleriana*, from the Philippines, with rosy flowers and mottled leaves.

**Motion** (Lat. *motio*). In mechanics, change of position of a body. All motion is relative, e.g. a body moving on the earth is treated usually as though the earth were at rest, though it is moving round the sun, and the latter is moving through space, both of which motions are imparted to the moving body. The laws of motion, first enunciated by Newton, are dealt with under Mechanics.

**Motion.** In music, the progression of voices or parts from note to note. The motion of a single part may be upward; downward; conjunct, proceeding by single degrees; disjunct, proceeding by skips. Comparing one part with another motion may be of three kinds: similar, when the parts move in the same direction; contrary, when they move in opposite directions; oblique, when one is stationary while another moves up or down.

**Motive** (Lat. *motivum*, from *movere*, to move). The mental cause of a voluntary decision or action. Usually an important choice will have more than one motive, though one may predominate. Motives used to be defined as "incentives to the will"; as the concept of a will was discarded, they were regarded as forces supporting the contestants in a mental struggle. If conscience is at odds with some forbidden impulse, various memories, beliefs, feelings, ideals, etc., will be marshalled on either side, each constituting a motive which will affect the final choice of the mind.

It used to be thought that a man could discover his own motives,



and much value is still set by some religious bodies on self-examination. Now it is realized that unconscious elements play a large part in determining human behaviour. This fact does not destroy all the value of honest self-scrutiny, but acts as a useful check when lofty motives are adduced for dubious behaviour. The motive of an action may be contrasted with its intention, the latter taking account of known and accepted consequences. Desire to produce these effects may be a motive; on the other hand, the motive may be an impulse so strong that it leads a man to "damn the consequences."

**Motley, JOHN LOTHROP** (1814-77). American historian. Born at Dorchester, Mass., April 15,



1814, he was educated at Harvard, Göttingen, and Berlin. Having worked with the American legation in St. Petersburg, he became U.S. minister in Vienna, 1861-67, and in London, 1869-70. He passed much time in England, and at Frampton Court, Dorchester, Dorset, he died, May 29, 1877. One of his daughters married Sir William Harcourt.

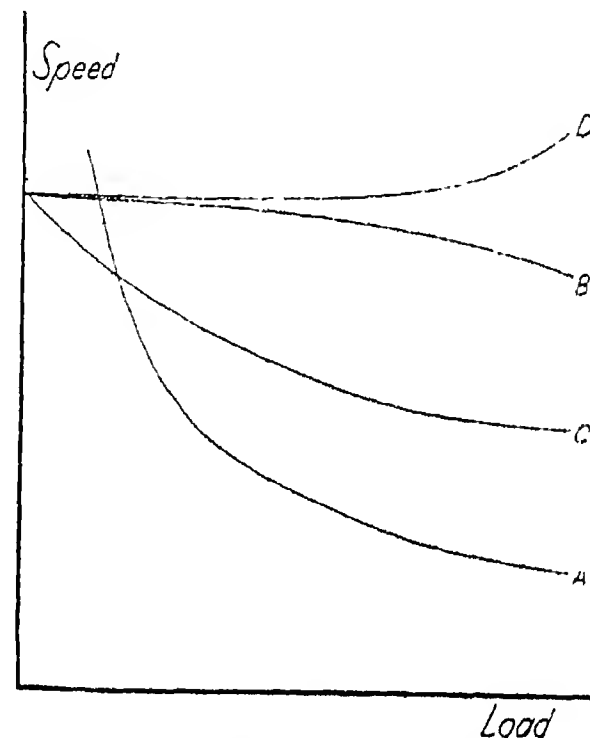
Motley began his literary career with novels, *Morton's Hope*, 1839, and *Merry Mount*, 1849. He had already formed the idea of writing the history of the Dutch, and he spent time in Holland, Belgium, and Germany studying authorities. In 1856 his *Rise of the Dutch Republic*, 3 vols., at once made him famous. It was translated into French, German, and Dutch, and was followed by the *History of the United Netherlands*, 1860-68, another great success. Motley writes with real enthusiasm about the struggles of the Dutch for freedom, though his thesis is no longer considered valid. His style is clear and vigorous. He wrote also *The Life and Death of John of Barneveld*, 1874. His correspondence was edited by G. W. Curtis, 1889. Consult J. L. M. and His Family, ed. S. St. J. Mildmay, 1910.

**Motor.** A machine supplying motive power. The name has come to be applied to prime movers other than the steam engine, e.g. electric motor; petrol motor; spring motor. The driver of an electric train in Great Britain is

commonly called a motorman, as distinct from the "engine driver" of a steam locomotive. Spring motors are used for driving gramophones, shop display machines, time switches, etc.; the mechanism resembles that of a clock. Weight-driven motors are similar except that a descending weight supplies the driving force. In model aeroplanes the energy stored up in twisted strips of rubber drives an airscrew as the rubber unwinds—another form of spring motor. (See Clock; Internal Combustion Engine; Spring.)

**ELECTRIC MOTOR.** Machines for converting electrical energy into mechanical energy may be classified in various ways. The fundamental division is into machines for use with direct current and with alternating current.

Direct current motors differ from D.C. dynamos only in detail. All general principles are the same, and the same types of field wind-



**Motor.** Diagram showing curves of speed variations with load for different types of direct current motors. A, series; B, shunt; C, compound; D, reverse and differential compound

ings (series, shunt, and compound) are used (see Dynamo). *Series* motors have a speed characteristic which varies inversely with the load; they will reach dangerous speed if the load is removed. They are used for traction work, etc., where a high starting torque is required. *Shunt* motors have a more stable characteristic, which drops slightly from no load to full load; they are used in most machine drives where this is of value. *Compound* motors have the normal characteristics of a shunt machine with a slightly greater drop in speed, but the series field enables them to cope with high starting torques and momentary overloads. *Reverse compound* machines (where the series field opposes the shunt field) have a remarkably constant

speed characteristic, but little or no overload capacity.

Alternating current motors, in addition to classification as single phase or polyphase types, may be subdivided into *synchronous*, running at one fixed speed, and *asynchronous*, which can run at various speeds. Synchronous motors resemble alternators in the same way that D.C. motors resemble dynamos: an alternator connected with another source of electric power will, if its prime mover stops, continue running like a D.C. dynamo. A synchronous motor will develop torque only when in absolute synchronism with the supply frequency; if unduly overloaded, it will stop, and it is not self-starting.

Asynchronous motors may be further subdivided into *induction* and *commutator* motors. The former are probably the most widely used of any, owing to their simple and robust construction. They have two main classes: *slip-ring*, with a conventional type of wound rotor, and *squirrel-cage*, with a simple rotor consisting of a cage-like structure of copper bars embedded in the iron stampings. Induction motors normally run at a speed slightly lower than the appropriate synchronous speed.

Commutator machines are of many designs. A simple series motor, providing it does not have solid iron field magnets, will run on A.C. as well as D.C.; the motor of a domestic vacuum cleaner is of this pattern. The *Schrage* motor allows a wide range of speed by shifting the relative position of two sets of brushes on the commutator. Hybrid designs, such as *series repulsion* and *repulsion-induction*, are intended to partake of the advantages of two or more types.

Motors may be classified according to their mechanical construction and method of enclosure, such as *open type*; *protected*; *drip-proof*; *totally enclosed pipe ventilated* (for dusty situations); *totally enclosed radiator cooled*. There are variations such as vertical or horizontal mounting, and skeleton motors supplied as a stator and rotor unit without enclosure of bearings, for building directly into machine tool units as an integral part of the machine. See Electro-Magnetic Machine.

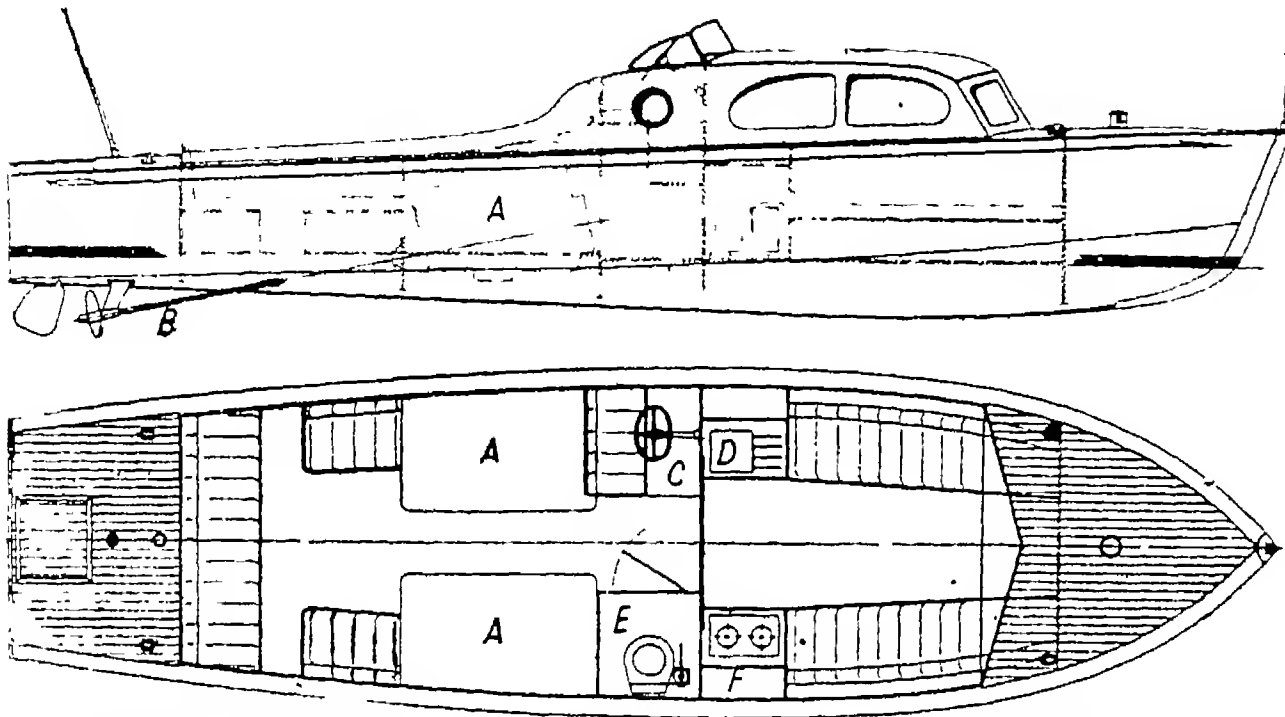
**Motor Boat.** Small vessel propelled by a motor, especially by an internal combustion engine. Its inception dates from 1885, when a launch was successfully propelled by a motor engine. Slow progress was made until 1904, when the Royal Automobile Club held a

cross-Channel race for motor boats, with resultant publicity.

Motor boats can be divided roughly into two categories: displacement craft and hydroplanes.

additional comfort of newer vehicles, but more because of greatly extended services. Moreover, the charabanc was associated with special trips rather than regular

as London and Edinburgh, and coaches maintaining services between the U.K. and the cities of Continental Europe, the Channel being crossed by ferry.



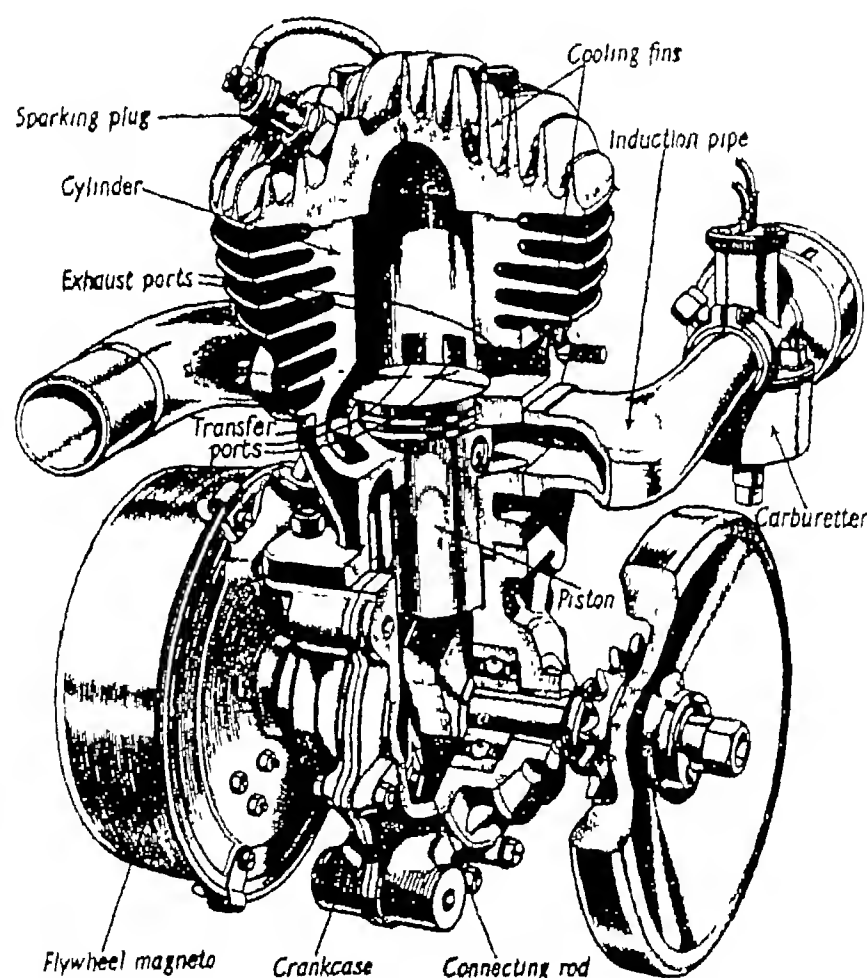
**Motor Boat.** Diagram of deck and broadside. A, twin diesel engines. B, propeller shaft. C, steering position. D, sink. E, lavatory. F, stove  
By courtesy of Yachting World

In displacement craft the same amount of water is displaced, no matter at what speed the boat travels. A hydroplane rises partly out of the water when running fast, which reduces the amount of water displaced. Displacement craft range from outboard motor boats to cabin cruisers 20 ft. long and more. A cruiser has cabin accommodation and is usually seaworthy in moderately rough conditions. The power unit is generally a heavy oil engine, giving a speed of 8-12 knots. Outboard motors, complete with propeller, propeller drive, and fuel tank, are attached to the sterns of small boats used in sheltered waters. Specially designed craft use these power units for racing. The engines are of the two-cycle type, weigh about 40 lb., and are usually rated at 1½-2½ h.p.

Hydroplanes range from the open launch with a speed of 20-30 knots and often powered by an adapted motor car engine of some 30 h.p., to the Bluebird II which, powered by a jet engine, set up a world speed record of 239.07 m.p.h. on Coniston Water, Nov. 8, 1957. High speed motor launches were used by the Air-Sea Rescue service (*q.v.*) in the Second Great War. Motor vessels (*q.v.*) are of considerable tonnage, fitted with diesel marine engines, and able to remain at sea in all weathers.

**Motor Coach.** Vehicle used for long-distance passenger transport. In the 1920s the term charabanc, taken over from horse-drawn vehicles, was replaced by that of motor coach, partly owing to the

service. While motor buses, which are stage carriages, ply for hire in towns or over relatively small distances, with frequent stops, motor coaches maintain services which form a network with stops at fixed and infrequent points. Expansion, convenience, and low fares of motor coach services attracted thousands of tra-



**Motor Cycle.** Diagram showing arrangement of single-cylinder two-stroke engine

vellers before the Second Great War; this volume of heavy traffic was one reason for the improvement of highways, while outlying districts were brought into closer contact with centres of population. Mid-20th-century developments of the motor coach were: the long-distance coach travelling non-stop between places as far apart

**Motor Cycle.** Any mechanically propelled vehicle, other than an invalid tricycle, with less than four wheels and an unladen weight not exceeding 8 cwt. This is the legal definition of a motor cycle, a term which thus includes three-wheeled cars or runabouts as well as the two-wheeled power-driven motor cycle (the solo motor cycle), the motor cycle with sidecar, and the autocycle, or motorised bicycle.

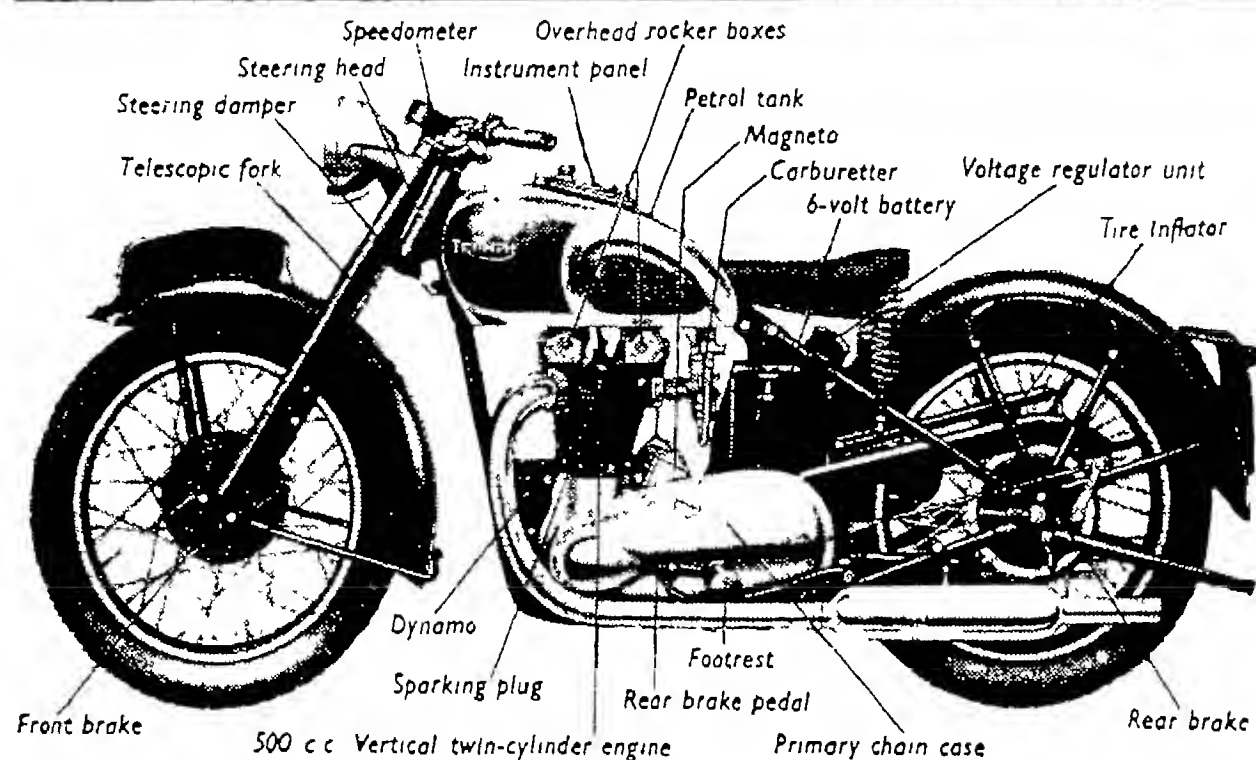
The adoption of the high-tension magneto, c. 1905, marked the achievement of reliability in the motor cycle, and after the First Great War this vehicle became the most numerous type of powered vehicle on the roads.

Motor cycles are classified according to their type (*i.e.* for transport, touring, or sport), and the capacity of their engines in c.c. Autocycles are fitted with pedals and, as a rule, have an engine of under 100 c.c. The power units of autocycles and of lightweight motor cycles are usually single-cylinder two-stroke engines in which there is one power impulse per revolution of the crankshaft.

The parts of the two-stroke engine are shown in the diagram. Such power units in the smaller sizes develop approx. the same power as a four-stroke engine of equivalent size. The limiting factor is the short period during which the charge of fresh gas is induced. The popularity of the two-stroke for light machines arises from its simplicity, low cost of manufacture, and lasting qualities. Lubrication is usually effected by mixing oil with the petrol—a mixture referred to as "petroil."

Single-cylinder engines are used in nearly all machines up to 250 c.c. Above this size there are both single- and twin-cylinder engines and, in the luxury class, some four-cylinder engines. There are power units with the two cylinders arranged in "V" formation and others with the cylinders horizontally opposed to each other, but the most popular type of twin is





**Motor Cycle.** Diagram showing the positions of the principal parts of a 500 c.c. vertical twin-cylinder motor cycle

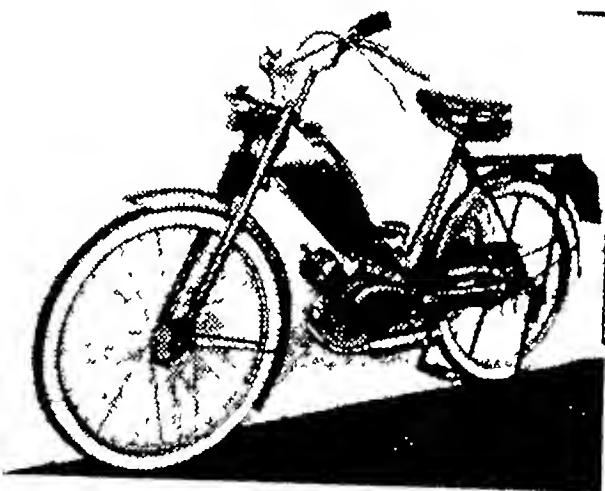
the vertical twin, in which the cylinders are side by side and the two pistons move up and down together. This gives one power impulse per engine revolution—a smooth torque or turning moment—but with single-cylinder balance.

The majority of four-stroke engines are of overhead-valve (o.h.v.) type, with the valves arranged at an angle in a hemispherical combustion chamber and operated by rocking levers and push rods from cams mounted in an extension of the crankcase. Overhead valves are preferred to side-by-side valves because a smaller area is in contact with the burning gases, so that less heat is wasted and there is greater freedom from cylinder distortion. Overhead valves are used in touring as well as sports engines. Lubrication is automatic and is usually on the dry-sump system, in which one mechanical pump passes a continuous stream of lubricant from the oil container to the engine—generally direct to the heavily loaded big-end bearing of the connecting rod—and a second, larger pump draws the oil from the crankcase (thus keeping it “dry”) and returns it to the oil container ready, after passing through a filter, for further use.

Engine cooling is almost invariably by ribs cast on the cylinder and cylinder head; these dissipate the excess heat by conduction, radiation, and convection—when the motor cycle is moving, mainly by conduction. Carburation, once the engine has been started, is automatic and is controlled by a single lever usually in the form of a rotatable right handlebar grip. Transmission is by roller chain or chains except on some of the more expensive motor cycles, which have a cardan shaft with either spiral, bevel, or worm gearing. Four-speed foot-controlled gear boxes

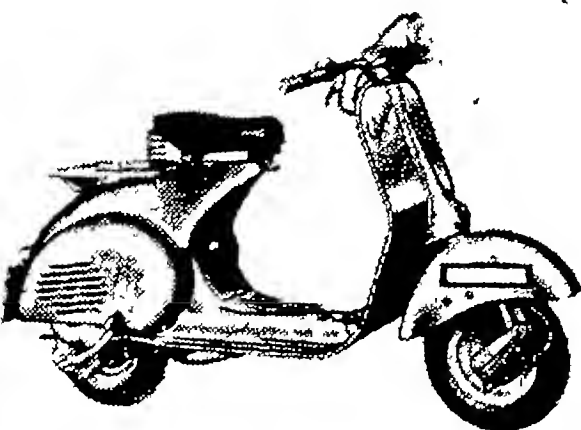
with hand clutches and pedal (kick) starters are standard on nearly all motor cycles; autocycles have a single gear or, at the most, a simple two-speed gear, plus a hand clutch.

All motor cycles are fitted with spring front forks, generally in the form of a pair of telescoping legs controlled hydraulically. Similar rear-wheel suspension is available on many large motor cycles. Except on lightweight machines, tires are of 3½-in. section or larger. Motor cycles have internal expanding brakes, and are exceptional in their braking efficiency, 30 ft. from 30 m.p.h. being usual.



Cyclemaster “Berini” autocycle

A compromise between the motor cycle and the “moped,” or bicycle fitted with an auxiliary



Douglas “Vespa” motor scooter

engine directly driving the front or rear wheel, is the autocycle. This has a strengthened pedal-cycle frame and a built-in engine

of approx. 49 c.c. Controls are similar to those of the ordinary motor cycle, but fuel consumption is lower and the machine can be pedalled like a bicycle in the event of engine failure. A notable mid-20th century development of the motor cycle is the motor scooter. The engine, usually 125 c.c., is completely enclosed, and the vehicle's low centre of gravity make it exceptionally stable and easy to ride. It is cleaner than a motor cycle and therefore popular with women riders.

**Motor Insurers' Bureau.** Company set up in 1946 by motor vehicle insurers which, by agreement with the ministry of Transport, undertook to pay damages awarded by the courts to persons injured, or to the personal representatives of persons killed, in road accidents caused by motor vehicles where the damages cannot be recovered either because the motorist has failed to insure or because the policy is for some reason inoperative. The liability of the motorist must first be established. In cases where the motor vehicles concerned cannot be traced an ex gratia payment may be made. Notice must be given to the bureau not later than 21 days after legal proceedings against the motorist have been started.

**Motor Nerves.** Nerves which conduct impulses from the brain or spinal cord to the voluntary or involuntary muscles, and cause them to contract. When, for instance, a person wishes to raise his arm, an impulse starts from the brain, and, travelling down the motor nerves, stimulates the appropriate muscles, which perform the action intended. The reaction seems ultimately to depend on the liberation of a chemical substance at the junction of nerve and muscle. See Nervous System.

**Motor Torpedo Boat.** Small high-speed vessel designed for night attack on enemy convoys or warships. Mostly built for the Royal Navy during the Second Great War, they operated in the North Sea and English Channel, where with other coastal craft they obtained ascendancy over the German light forces. German craft known as E-boats were similar to the British but slightly faster. Italian anti-submarine boats were smaller and had a range of only some 250 m., but like the others carried two torpedo tubes, machine-guns, and automatic shell-firing guns. See Coastal Craft; E-boat.

## MOTOR VEHICLE: HISTORY, PRINCIPLES, AND LAW

*This article begins by tracing the history and development of mechanical road vehicles from the steam tractor and stage coach to the petrol-engined motor car. Then follows a detailed description of typical motor vehicles and their components. The article concludes with a survey of the legal aspects of motor transport from the first legislation in 1865 to the provisions of the Road Traffic Act of 1956. See also Diesel Engine ; Internal Combustion Engine*

As explained in the article Locomotive, the first practical mechanically-propelled road vehicles were the steam gun-tractor built by the Frenchman Nicholas Cugnot in 1769 and the road locomotive built by Richard Trevithick in 1803. Although the most important application of the steam locomotive was to railways, it was in its early days concurrently developed for road vehicles.

In 1825, Goldsworthy Gurney (1793-1875) built a steam stage-coach seating six passengers inside and 12 outside. The vehicle, which was driven by a steam engine mounted over the rear wheels, weighed four tons unladen, and was 15 ft. long. All the controls were in a driving platform at the front and steering was by two wheels actuated by a tiller. The engine developed 12 h.p. and could drive the coach at a maximum speed of 10 m.p.h.

By 1830, Gurney had a fleet of 12 steam coaches operating regularly between London, Brighton, Bath, Southampton, and Manchester. The London-Bath service carried 500 passengers a month. Engine power had been so improved that on some sections of Gurney's routes his steam coaches travelled at 30 m.p.h. and ascended hills of 1 in 6 at 16 m.p.h.

### Railway Opposition

The railways established in various parts of the U.K. recognized in Gurney's steam road-services a serious rival to their expanding business, and succeeded in having legislation passed imposing heavy toll charges on Gurney's vehicles. In 1832 these charges accounted for 50 p.c. of the steam coaches' working costs. Despite the findings of an independent committee that the steam coaches met a public demand, the penal system of tolls continued and in 1833 drove Gurney out of business.

In 1828 Walter Hancock had established a line of steam coaches but, like Gurney, he was driven off the main roads by the heavy toll charges. He then started a service of steam omnibuses in London and by 1835 had a dozen vehicles in the streets. Because of the mania for

railway speculation, Hancock was unable to raise capital to replace his buses as they wore out, and in 1838 he was forced to take his remaining vehicles out of service.

Gurney and Hancock had demonstrated the possibilities of mechanical road-transport, but the steam engine was a clumsy and inefficient power unit for road vehicles. Any further development of mechanically-propelled road vehicles was discouraged by an act of parliament of 1865 restricting the speed of horseless carriages to 4 m.p.h. in the country and 2 m.p.h. in the towns, while all such vehicles were compelled to carry three men as crew and to be preceded by a man carrying a red flag.

Long before Cugnot built the first practical steam tractor, inventors had been thinking on the lines of a road vehicle deriving its power directly from the combustion of a fuel and not, as with a steam engine, through the intermediary of a boiler.

### Internal Combustion Engine

Technically, the direct forerunner of the internal combustion engine was the gun, wherein the pressure produced by the expansion of gas generated by the explosion of gunpowder drives a missile out of a cylindrical tube. Numerous experiments were made in the 16th and 17th centuries to obtain mechanical power from the explosion of rows of small cannon, but all failed because of the difficulty of controlling any system of intermittent feeding of fuel to the barrels. Moreover, gunpowder was an extremely dangerous fuel and there were not the metals available to make barrels or cylinders strong enough to withstand the explosions.

With the discovery that gas could be extracted from coal, the problem seemed nearer solution, and in 1790 John Street, an English engineer, wrote a treatise pointing out the advantages of an inflammable vapour as fuel for inducing the necessary explosion in the cylinders of an internal combustion engine. Street never put his theories into practice, but in 1823 another English engineer,

Samuel Brown, designed and built a primitive gas-burning engine.

Brown's engine was extremely inefficient and developed such low power that the idea was not fully exploited until in 1860 the Frenchman Lenoir patented his gas engine (see Gas Engine). Lenoir's engine used a mixture of gas and air admitted into the cylinders by a valve for about a half of the stroke of the piston, the fuel being fired by an electric spark immediately the valve closed. A similar explosion on the other side returned the piston and swept the cylinder clear of the products of combustion: hence there were two explosions for every revolution of the crank-shaft. Although it introduced the electrical method of starting combustion, Lenoir's engine used an enormous quantity of gas; it did not compress the mixture before firing; and a vehicle powered by it never exceeded a speed of 4 m.p.h.

### First Four-Stroke

In 1864, another Frenchman, Beau de Rochas, outlined the principles which continue to govern the design of all internal combustion piston-engines as applied to road vehicles. In de Rochas' engine, four different operations occurred during two revolutions of the crank-shaft, and, the cylinder being open at the crank side, all actions took place on one side of the piston. Fitted to the cylinder head were two valves which, in conjunction with one of the four strokes of the piston, controlled each of the four operations occurring in the cylinder. The first outward stroke of the piston increased the space in the cylinder which was at once filled with a mixture of gas and air drawn through one of the valves. The fuel was then compressed by the return stroke, at the conclusion of which the mixture was ignited: the third stroke supplied the motive power; the second return stroke exhausted the cylinder of all gaseous products of combustion and discharged them through the second valve. As power was communicated to the crank-shaft during only one of the four strokes, a flywheel maintained a constant speed during the unproductive strokes of the piston.

De Rochas's experiments eventually made possible the motor car, but the fact that his engine was driven by coal-gas discouraged its use for transport because of the huge storage bags required to hold the gas fuel. On the other hand, the engine proved satisfactory for



stationary work and as such was developed by Nicholas Otto (1839-91).

In 1873 Siegfried Markus, an Austrian engineer, made an important advance by building an internal combustion engine using benzine as fuel. The engine, very similar to that designed by de Rochas, was mounted under a two-wheeled handcart and connected

Contemporaneously with Benz, Panhard and Levassior, who had acquired the French patents for the Daimler engine, were building motor cars in France. Both these manufacturers improved upon their German model, and by 1888 were making over 100 cars a year.

In 1894 *Le Petit Journal* organized the world's first motor race when 190 cars took part in a trial run from Paris to Rouen. The following year a race was held from Paris to Bordeaux which was won by Levassior who drove a 4 h.p. Panhard and covered the 732 miles at an average speed of 15 miles an hour.

While Germany and France did everything to encourage motoring and so laid the foundations of great industries, development of the motor car in the U.K. was hampered by the speed restrictions of the act of 1865. In 1887 Edward Butler built a motor tricycle which proved as efficient as any produced on the Continent. It had two front wheels and was driven from the single rear wheel by an engine of the compression type. It had coil and battery ignition, and a radiator for cooling the water circulating round the cylinders. It was intended to begin production of Butler's motor on a commercial scale, but it was impossible to carry out any trials as the authorities refused to suspend the 4 m.p.h. speed limit.

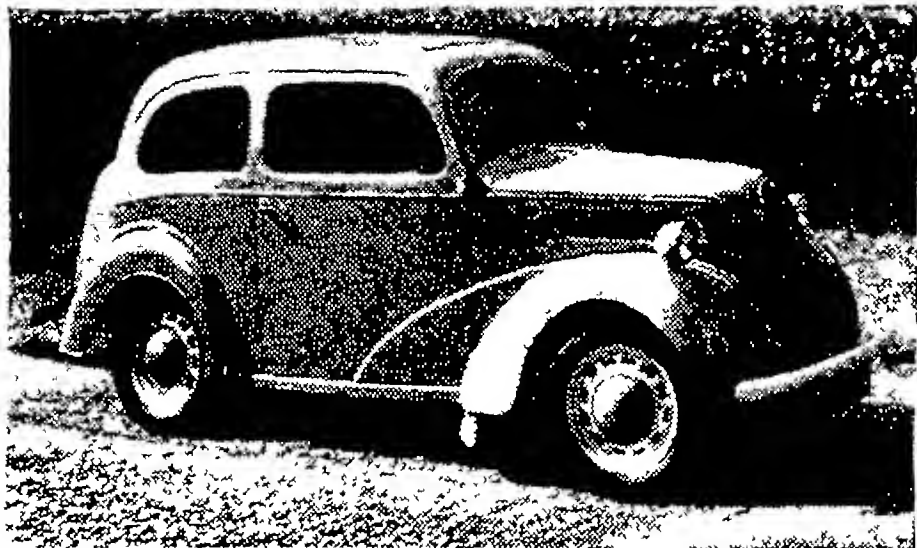
In 1896 serious motoring became possible in the U.K. when the Locomotives on the Highways Act raised the speed limit to 14 m.p.h. for vehicles weighing less than  $1\frac{1}{2}$  tons and abolished the man with the red flag. On Nov. 16 of that year motorists celebrated their emancipation by organizing a grand drive from London to Brighton: of the 40 cars entered, 16 completed the journey, the first to arrive having made the journey in eight hours. This run has since become an annual event for "vintage" cars. But local government boards were given consider-

able powers in the administration of the 1896 act, and most of them enforced a speed limit of 12 m.p.h.

The Motor Car Act of 1903 increased the speed limit to 20 m.p.h.; authorised local authorities to impose a speed limit of 10 m.p.h. within certain areas; made driving licences compulsory and "dangerous driving" an indictable offence; and introduced the registration of all self-propelled vehicles. Following the acts of 1896 and 1903, the motor vehicle became increasingly popular in Great Britain. In the half century from 1907 to 1957, the number of motor vehicles in the U.K. rose from 108,815 to 6,386,231. At the same time the motor industry became one of the most important in the U.K. where vast factories mass-produce cars at the rate of thousands a day, and British motor vehicles are a major export to all parts of the world, including the U.S.A.

**SOCIAL IMPACT.** During the period between the First and Second Great Wars, motoring became the recreation of millions, whereas before it had been enjoyed chiefly by the well-to-do. Cars are owned by all classes of the community, and for hundreds of thousands of people they are a necessity rather than a luxury. Despite petrol rationing during and after the Second Great War, the number of privately-owned motor vehicles was in 1958 nearly double that in 1938.

Motoring holidays have become a commonplace and given millions of people a knowledge and appreciation of their own countryside, towns, and villages. A popular form of holiday is the motor camping tour with towed

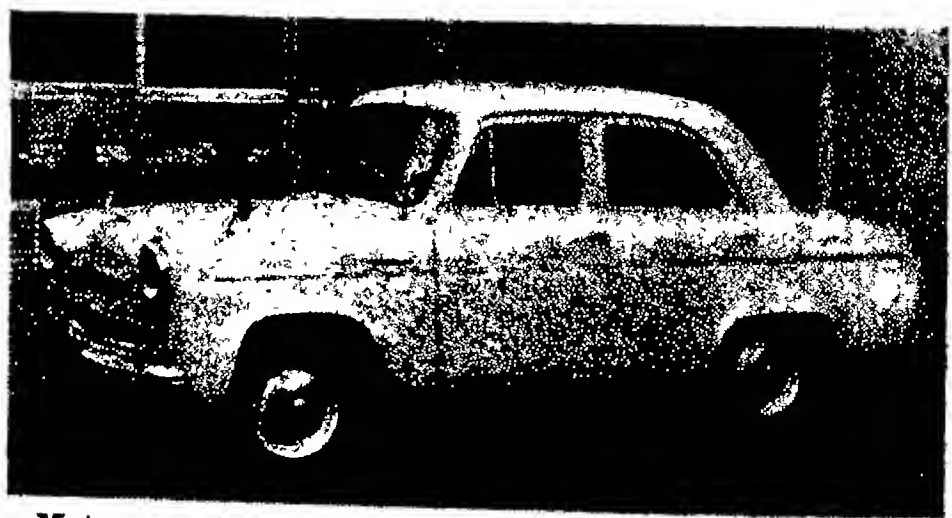


Motor car of traditional design: the Ford Popular 4-seater 2-door saloon (1957)

to the axle by a chain drive. The vehicle was steered from a second two-wheeled cart coupled to the front of that containing the engine. The engine was too heavy and clumsy to be of practical use, and Markus's experiments were ended when the Vienna police banned his vehicle from the streets because of the crowds it attracted.

During the next decade various types of internal combustion engine were designed, some using vapour fuel and others liquid, but it was not until 1884 that the problem was solved when Gottlieb Daimler (1834-1900) built his first engine. Daimler had worked in Otto's factory, and, improving upon the gas engines there manufactured, designed a vertical petrol engine which he placed between the wheels of a safety bicycle. The reliability of vaporised petrol as a motor fuel was at once proved, and the Daimler engine met with instant success.

In 1885 Carl Benz built his first automobile. This historic vehicle was a two-seater and was mounted on three wire wheels fitted with solid rubber tires. The engine, which was placed directly over the rear axle, had a single horizontal cylinder and a vertical crankshaft driving a horizontal shaft through bevel gears. This was in turn connected with a shaft having a series of fast and loose pulleys; the drive was transmitted to the rear wheels by sprockets and chains. The engine developed  $\frac{3}{4}$  h.p. and received its explosive mixture from a surface carburettor and a mixing valve. Ignition was by coil and battery.



Motor car of "contemporary" design: the Ford Prefect de luxe (1958)

caravan, and motoring holidays abroad, often with caravan trailers, are increasingly popular.

The increase in the speed of traffic which came with the application of mechanical motive power to road vehicles led to a great improvement in road surfaces, the

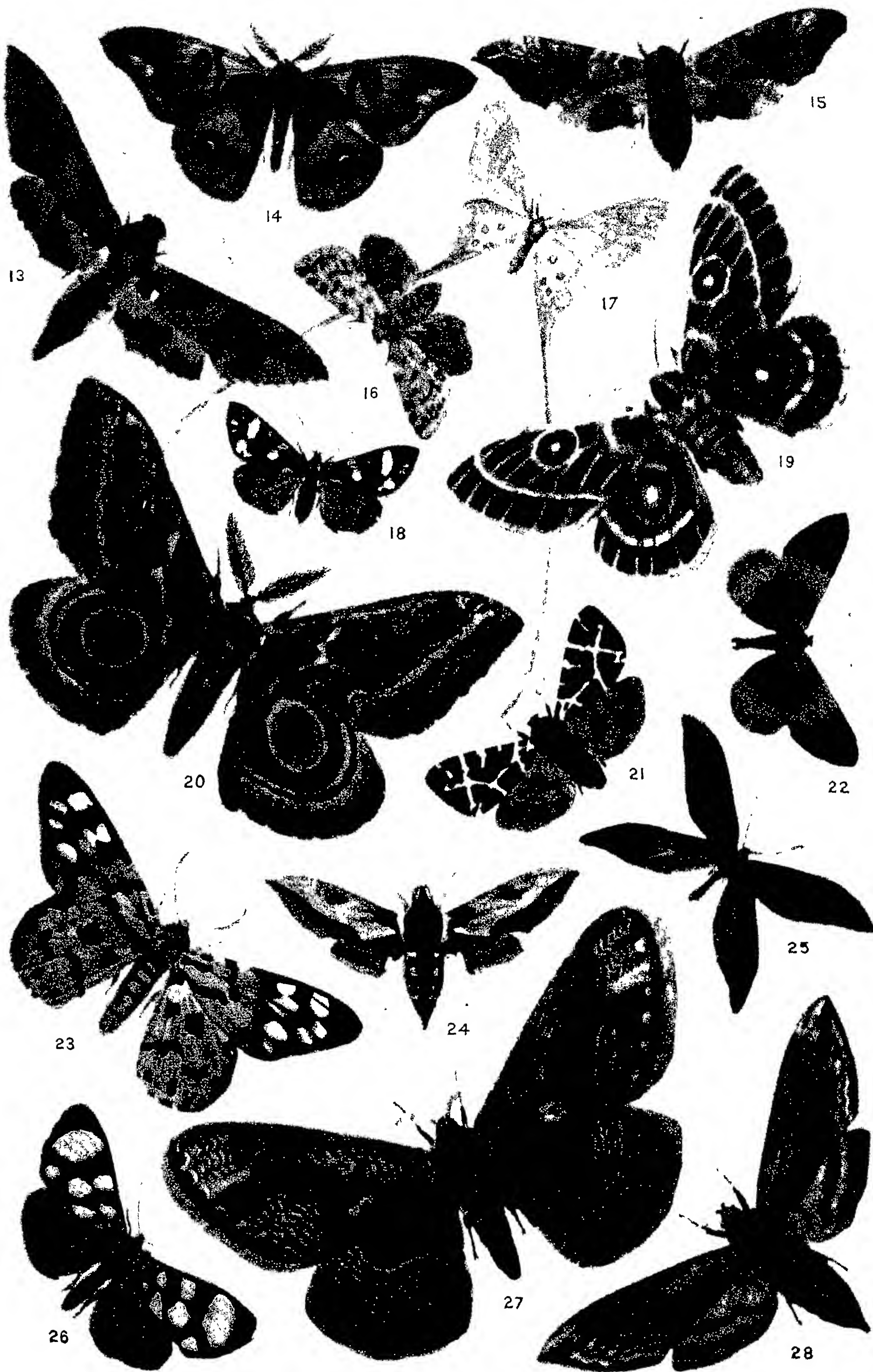


1. *Acherontia atropos* (Death's Head), Britain. 2. *Amesia sanguiflua*, N. India. 3. *Erasmia pulchella*, India, China. 4. *Ophideres fullonica*, Africa, Asia, America, Australia. 5. *Miniodes discolor*, W. Africa. 6. *Chrysidia madagascariensis*, Madagascar. 7. *Pericallia galactini*, China

India, Borneo. 8. *Egybolis vaillantana*, Africa. 9. *Attacus atlas* (Atlas Moth), India, China, Ceylon. 10. *Daphnis nerii* (Oleander Hawk Moth), Britain, Asia, Africa. 11. *Zygaena filipendulae* (6-spotted Burnet), Britain. 12. *Gloriana ornata*, N. India

#### MOTH: EXAMPLES OF SPECIES FROM ALL PARTS OF THE WORLD





13. *Euchloron megaera*, Africa. 14. *Polythysana rubescens*, Chile. 15. *Smerinthus ocellatus* (Eyed Hawk Moth), Britain. 16. *Diacrisia purpurata*, Europe, Japan. 17. *Eustera brachyura*, Sierra Leone. 18. *Callimorpha dominula*, Britain. 19. *Nudauretta zaddachii*, S. Africa. 20. *Gynanisa maia*, S. Africa. 21. *Arctia caia*, Britain,

Asia, America. 22. *Milionia zonea*, N. India. 23. *Euschemia militaris*, India, China. 24. *Dellephila euphorbiae* (Spurge Hawk Moth), Britain, Asia. 25. *Hista flabelli cornis*, India. 26. *Xanthospiloptyx superba*, Africa. 27. *Brahmaea wallichii*, N. India. 28. *Sphinx ligustri* (Privet Hawk Moth), Britain, to China and Japan.

#### MOTH: EXAMPLES OF SPECIES FROM ALL PARTS OF THE WORLD

See over

To face page 3881

straightening and widening of existing roads, the introduction of the circular movement of traffic ("roundabouts") at dangerous road crossings, and, in towns, of one-way-traffic streets. New roads, bypassing towns, were constructed, and along these occurred "ribbon development." Filling stations for the supply of petrol, oil, and tires, which usually also did repairs, sprang up in towns and villages, and along country roads. Old inns and hotels revived and a new type of inn called a road-house, supplying dancing, swimming, and refreshments, came into being.

**MOTOR RACING.** Speed and endurance contests between motor vehicles, sometimes specially designed for racing, began as a sport and popular spectacle with the trial run organized by *Le Petit Journal* in 1894. Road racing on closed circuits remained supreme on the Continent, but for many years road racing was not permitted in the U.K. and track events at Brooklands (*q.v.*) were the nur-

Great War) the Double Twelve-Hours' race at Brooklands, and the International Grand Prix and other events at Donington.

Famous meetings abroad have included the Monte Carlo rally, an annual reliability trial; the German grand prix at Nuremberg; the Tripoli grand prix and the French grand prix.

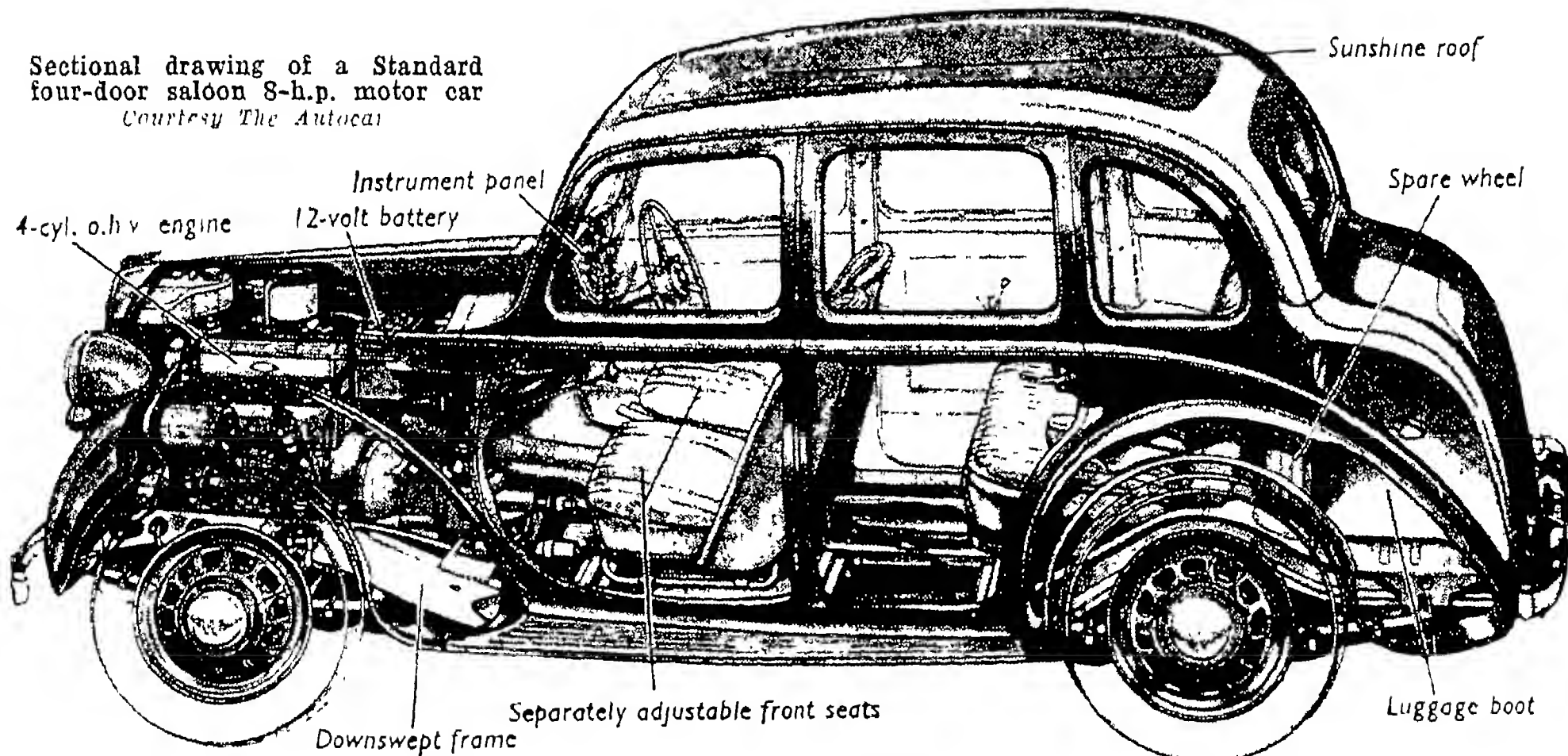
Some speed records are: 1898, an electrically-driven vehicle achieved 39.24 m.p.h. over a kilometre; 1902, an internal-combustion engine vehicle reached 76.08 m.p.h.; 1904, 103.56 m.p.h.; 1927 Segrave raised it to 203.79 m.p.h.; 1932, Campbell passed the 250 m.p.h. mark at 253.97 m.p.h. Intense competition between Campbell, Eyston, and Cobb culminated in 1939 in the achievement of 368.7 m.p.h. by Cobb, at Bonneville Flats, Utah, U.S.A. In 1947 Cobb set up a new record of 394.196 m.p.h. which still stood in 1958.

**CAR DESIGN.** There is much variation in the design of all types of motor vehicle. A typical

worm is at the foot of the inclined steering column at the upper end of which is the steering wheel. The worm wheel is on a short shaft from the end of which depends a lever called a drop arm. From the end of the drop arm a rod runs forward to a lever projecting from the moving portion of the front axle which carries the off-side front wheel. Thus movement of the steering wheel causes movement of the front wheel, which is linked to its fellow by a tie-rod.

Brakes are provided on all four wheels, and consist of steel drums containing two or more shoes lined with a friction material. These shoes are expanded against the inner surface of the brake drums by cams or wedges actuated by a system of rods or levers, or by small hydraulic cylinders containing pistons. The brakes are applied by a pedal operated by the driver's right foot. There is also a hand-brake, used chiefly for parking.

Between the front and rear axles and the chassis frame, springs are



series of British racing drivers. The R.A.C. eventually organized road races on the lines of the Monaco grand prix, the first being held in the Isle of Man in 1933. In 1934 road racing started at Donington, Leicestershire, but ceased during the Second Great War and was not revived.

Sports-car racing has been closely allied to the development of touring cars, and in this field Great Britain can look back on a long list of successes in *e.g.* the Tourist Trophy races on the Ards circuit in Ulster, the Phoenix Park events in Dublin, the Mannin Moar and Mannin Beg races at Douglas, Isle of Man, and (before the Second

private car of the popular 8 h.p. and 10 h.p. classes will have a four-cylinder engine with which the clutch and gear box form a unit. This is mounted at the front of a steel chassis frame and the power is transmitted to the rear axle by an open propeller shaft. In the rear axle is a spiral bevel final drive from which the half-axle shafts transmit the power to the rear wheels. The front wheels are pivoted to the ends of the axle beam, so that they can be inclined to one side or the other in order that the vehicle may be steered. The steering gear consists of a worm and worm wheel, or a variation of a worm and wheel; the

interposed. Their purpose is to absorb shocks due to road inequalities, so that the wheels may follow the road surface without disturbing the forward motion in a horizontal plane of the car as a whole. The action of the springs is controlled by dampers or shock absorbers.

On the chassis frame is mounted the body. In mass produced cars this is usually of steel pressings, provides seating for four passengers, has four doors, and probably a sliding roof panel which can be opened in fine weather. In body design there is much variation and even the smaller cars may have four or six windows,



may possibly be wide enough to seat three on the rear seat, and will have a locker for luggage.

**THE POWER UNIT.** The typical power unit has the cylinders and crankcase formed in a single iron casting. Valves may be side by side or overhead; in some units the inlet valves are of overhead type and the exhaust valves of side type. The cylinder head is detachable, of cast iron or aluminium. Pistons are usually of one of the aluminium alloys, and the connecting rods are of high-tensile steel, usually of H-section. The crankshaft is carried in bearings formed in the crankcase, and lined with white metal: similar bearings are used for the connecting rods. Enclosing the bottom of the crankcase is a steel pan or sump which also acts as an oil reservoir. Also in the crankcase is a shaft with cams or projections which operate the valves. This camshaft is driven from the crankshaft by a chain running over the sprockets on the two shafts, or by gear wheels, the drive being "geared down" so that the crankshaft makes two revolutions for one revolution of the camshaft.

#### Engine Cooling

From a small gear in the camshaft is driven a vertical shaft which projects down into the sump to drive the oil pump. Often the upper end of this shaft is used to drive the distributor of the coil ignition system. The oil pump delivers oil under pressure to the bearings and cylinders; filters are provided. Water cooling is usual: surrounding the cylinder bores is a water jacket connected to the top and bottom of a radiator. A water pump causes the water to be circulated round the cylinders and cylinder head and into the top of the radiator, where it is cooled as it passes down through the radiator and back to the water pump. This pump may have fan blades on its spindle so arranged that they draw air through the multitude of passages in the radiator block, and the pump and fan are usually driven by a rubber and canvas belt of V section passing over a pulley on the crankshaft and a similar pulley on the fan spindle. This belt drive is often used to drive the dynamo of the electrical system. The dynamo charges a storage battery which supplies current for the ignition, the starting motor, the amps, and direction indicators.

Many engines have mechanical fuel pumps operated by a special

cam on the camshaft. From the fuel pump a petrol pipe runs to the carburetter, which is the unit that mixes air and petrol vapour in the desired proportions and supplies it to the cylinders through the induction passages and inlet valves. The principle of the carburetter is that a restriction in an air passage results in a slight reduction in atmospheric pressure at that point, so that from the petrol jet which is situated in that region a fine spray of petrol is drawn, and mixes intimately with the air.

Ignition of the charge in the cylinders is by an electric spark at the sparking plugs, caused by the sudden surge of high tension current from the coil when the low tension current to the coil is interrupted by the contact breaker combined with the distributor.

#### Starting Motor

The starting motor has a pinion or gear wheel which engages with teeth cut in the circumference of the flywheel when the starter switch is closed. This pinion is mounted on a screw thread on the shaft of the starting motor and its inertia causes it to move along the thread and engage with the flywheel when the driver presses the starter. As soon as the engine fires, the higher speed of rotation causes the pinion to be disengaged.

**THE CLUTCH.** A vehicle driven by an internal combustion engine cannot be started from rest until the engine is connected to the road wheels. For that reason a friction clutch is necessary. The dry single-plate clutch is almost universally used. It consists of a disk of steel to which a lining of friction material is riveted. This is mounted on a splined hub on a short shaft which is co-axial with the flywheel and crankshaft, in such a manner that it is normally held in contact with the face of the flywheel by the action of springs. In this position the clutch is "engaged" or "in" and power is transmitted from the flywheel to the shaft in the gear box.

When, however, the driver depresses the clutch pedal with his left foot he causes the clutch disk to move slightly away from the flywheel, or to disengage. There is then no transmission of power from the engine to the gear box. There is also another possible disconnection in the transmission, i.e., that given by the gear box when its gear lever is in the neutral position, when there is no connexion between input and output shafts of the gear box.

To start a motor vehicle from rest, therefore, the driver first makes sure that the gear lever is in the neutral position. He then starts the engine, and depresses the clutch pedal. Now he can engage first gear, and start the vehicle from rest by gently releasing the clutch pedal, meanwhile increasing the power given by the engine by gently depressing the accelerator.

**THE GEAR BOX.** As the power developed by an internal combustion engine is a function of its speed of rotation, and as more power is required in climbing a steep hill than in running on the level, a gear box enables the engine to run faster while the vehicle is running more and more slowly as a hill become steeper. The gear box allows the driver to select one of a choice of gear ratios. The average car will have four gear ratios, a few have only three, some heavy commercial vehicles may have five or six.

A typical four-speed box of sliding gear type is shown in Fig. 1. This type of gear box is still used on commercial vehicles, but most private cars have a synchromesh box. The principle of this, however, is the same, although it differs in detail construction in that synchromesh gear wheels are always in mesh, but are not always in use. The wheels required to transmit power are brought into use by sliding dogs, and spring-loaded cone clutches cause the dogs to be running at the same speed before they actually engage. Hence changes of gear can be made without any special skill.

#### Action of Gear Box

In the four-speed sliding gear box shown, shaft A, driven by the clutch, embraces shaft C which projects from the rear of the box. To A are fixed pinion D and the internally toothed ring N. The lay or intermediate shaft B carries fixed pinions E (meshing with D), L, H, and F. Pinions M, K, and G (the two last joined together) revolve with C, but can slide along it when moved by forks in collars X, Y, forming part of the gear-changing mechanism. As shown all the sliding pinions are in their neutral positions, and A and B are able to revolve without influencing C.

To engage first gear, K and G are moved to the right and G meshes with F. Power is then transmitted from A to B through the constant mesh pinions D and E, and from B to C through F and G. For second gear K and G are moved to the left and K meshes with H. For

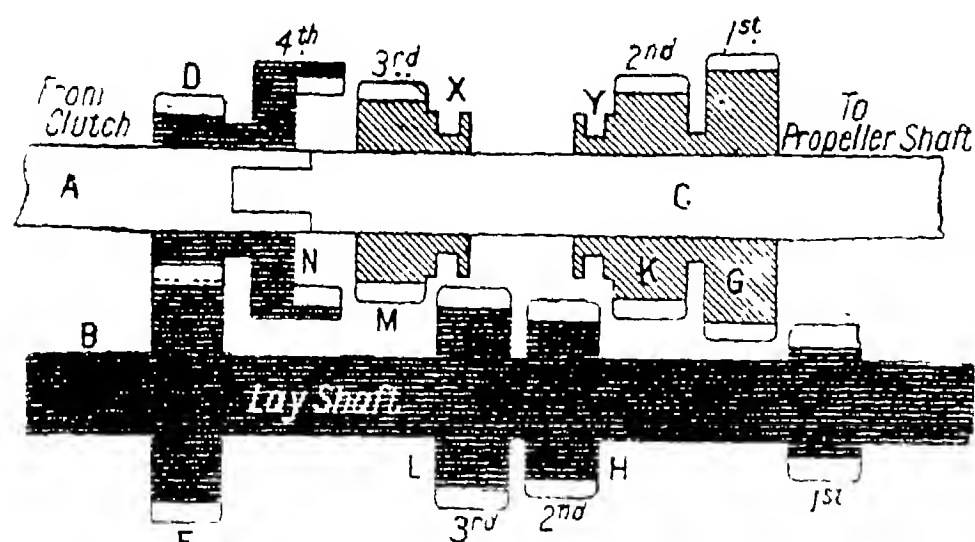


Fig. 1. Diagram showing arrangement of a four-speed sliding gear box. For lettering, see text

third gear M is moved to mesh with L, and for top or direct gear M is slipped into N, thus locking A and C together. Reverse is obtained by another pinion, not shown, which meshes with F and G.

**EPICYCLIC GEARS.** At one time epicyclic gears were more widely used than at present, but it is not unlikely that they will again become well known. In the epicyclic gear (Fig. 2) the sun wheel is coupled direct to the crankshaft of the engine. Meshing with the sun wheel are planet wheels which revolve on spindles carried by an arm on the driven shaft. Also meshing with the planet wheels is a ring gear or annulus to which an external brake band may be applied.

The operation of the epicyclic gear is as follows. If the whole mechanism is locked together so that it revolves as a whole, direct drive is obtained and the driven shaft will run at the same speed as the crankshaft. If, however, the brake band is applied to the annulus so as to prevent it from rotating, then the rotation of the sun wheel by the engine causes the planet wheels to rotate on their spindles in the opposite direction. They can do this, however, only by running round the stationary annulus in the same direction of rotation as the sun wheel, thereby carrying their spindles, and the arm and shaft to which the spindles are attached, in the same direction. Since the planet wheels are smaller than the sun wheel the engine will revolve a number of times before the driven shaft completes one revolution. In other words, therefore, there is a gear reduction between the crankshaft and the driven shaft.

The simple epicyclic train described is in reality a two-speed gear inasmuch as it gives direct drive and a reduction. Additional trains would provide further reductions if desired. This has, in fact, been done in the pre-selective gear box, and in the electro-magnetic-

ally controlled gear box in which electro-magnetic clutches are used instead of band brakes.

**DIFFERENTIAL.** From the gear box power is transmitted by a universally jointed propeller shaft to the final drive in the rear axle casing. With this is incorporated the differential, which is necessary to allow the drive to be transmitted to the wheels in a manner which leaves them free to revolve at different speeds when travelling on a curve. Fig. 3 explains the principle of the gear.

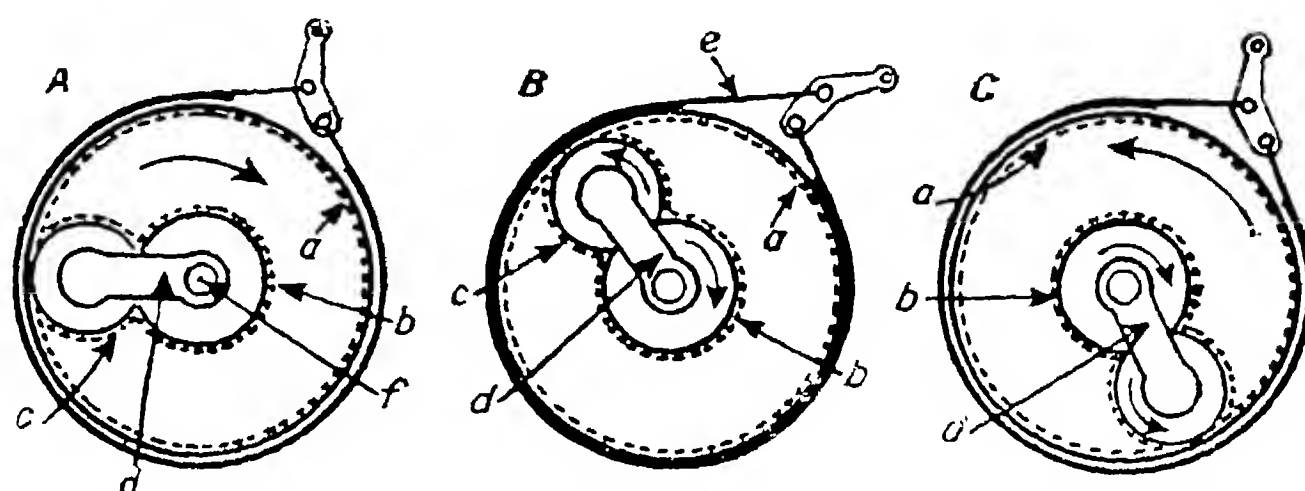


Fig. 2. Diagram of an epicyclic gear; A, direct drive; B, second speed; C, reverse. a, annulus; b, sun wheel; c, planet wheel; d, arm; e, band brake; f, shaft

Bevel B on the propeller-shaft S meshes with C, which carries round with it bevels D<sup>1</sup> and D<sup>2</sup>, free to revolve on centre pins and in gear respectively with E<sup>1</sup>, keyed to A<sup>1</sup>, and E<sup>2</sup>, keyed to A<sup>2</sup> (A<sup>1</sup> and A<sup>2</sup> are the half-axle shafts). Assume the driving wheels to be off the ground and C to revolve 20 times per minute, then A<sup>1</sup> and A<sup>2</sup> will both be drawn round by D<sup>1</sup> and D<sup>2</sup> at that rate. If the right-hand wheel be held, E<sup>2</sup> becomes a rack on which D<sup>1</sup> and D<sup>2</sup> run, and, as their axes are half-way between E<sup>1</sup> and E<sup>2</sup>, E<sup>1</sup> and A<sup>1</sup> revolve 40 times a minute. The average speed of E<sup>1</sup> and E<sup>2</sup> is still the same as that of C; and this averaging condition exists when either wheel runs faster than the other.

The bevel pinion B and crown wheel C, which have curved teeth on up-to-date vehicles, are called spiral bevels. These run more quietly than bevels with straight

teeth. Some commercial vehicles have a worm and worm wheel in place of a spiral bevel.

To damp out vibration and prevent it from reaching the occupants of the vehicle, it is usual to mount the power unit in the chassis frame on rubber blocks which are bonded to steel brackets by a special process. Frequently there will be three such mountings, one at each side of the engine at the front, and a third at the rear of the engine or beneath the gear box.

**CHASSIS FRAME.** Channel section steel pressings are used for the construction of the chassis frame; a usual design consists of two main longitudinal members strongly braced by a number of transverse members. Cruciform cross bracing at about the middle of the chassis just to the rear of the gear box is

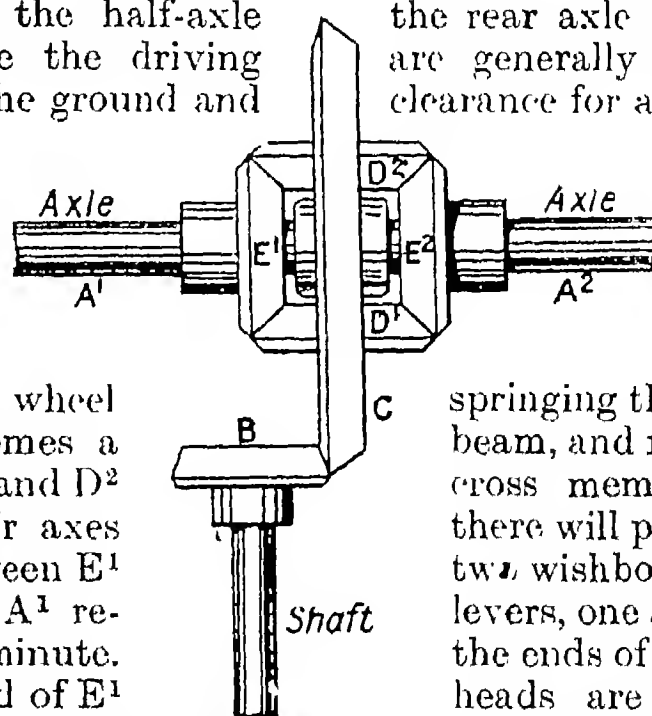


Fig. 3. Diagram of a differential gear. See text

general. The main members may taper outwards from front to rear in order to give room for the front wheels to move for steering, or the main members may be inswept at the front for the same reason. Over the rear axle the side members are generally upswept to give clearance for axle movement, an alternative being to sweep the frame down beneath the axle.

In a car with independent front springing there will be no axle beam, and from a strong front cross member of the frame there will project on each side two wishbone links or pivoted levers, one above the other, to the ends of which the steering heads are pivoted. A coil spring may be interposed between the lower link and the frame, or the lower link may be attached to one end of a torsion bar of which the other end is anchored to a bracket on the frame. In this case the springing effect is given by the twisting of the bar. Independent suspension for the rear wheels is sometimes adopted;



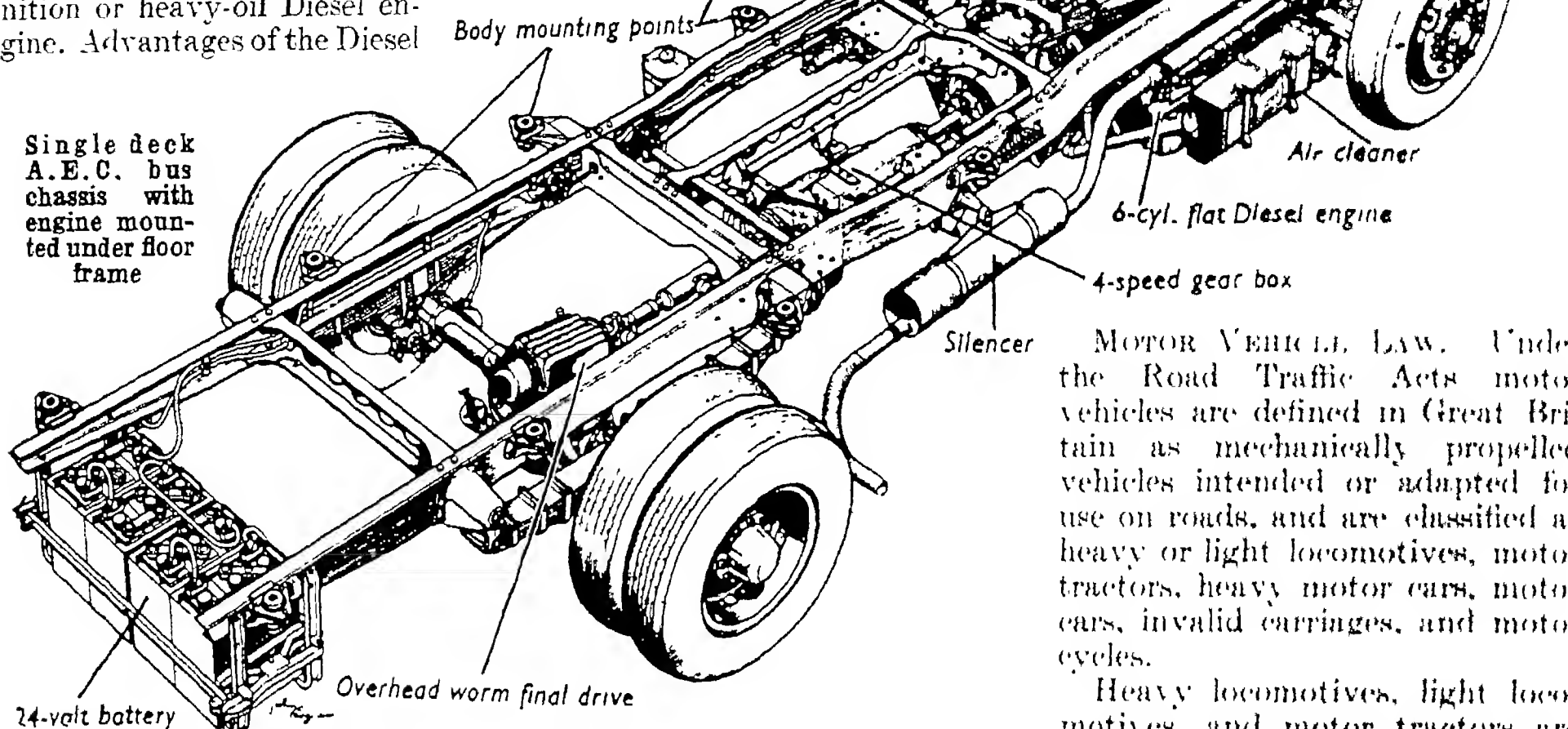
sometimes a separate chassis frame is dispensed with by making the steel body shell sufficiently strong to withstand the stresses normally taken by the frame. The body is suitably reinforced to receive the springs and also the power unit. This form of construction saves weight.

**DIESEL ENGINE.** Many passenger and load carrying vehicles are powered by the compression ignition or heavy-oil Diesel engine. Advantages of the Diesel

**COMMERCIAL VEHICLES.** In general, vehicles for load carrying follow the same lines of design as private cars, especially for light vans. Diesel engines are used for heavy goods and passenger vehicles.

The smaller load-carrying vehicles are four-wheelers: for heavy

Single deck  
A.E.C. bus  
chassis with  
engine moun-  
ted under floor  
frame



engine are lower fuel cost and reduced risk of fire. (See Diesel Engine).

On some vehicles, both private cars and commercial, the transmission system may have a fluid flywheel or hydraulic coupling in place of a friction clutch. The hydraulic coupling consists of a driving member or impellor and a driven member, the two being encased and containing oil. The impellor is formed as part of the engine flywheel and it has in it a series of radial vanes. The driven member is similarly vaned and is set close to the impellor so that the spaces between the vanes form a series of pockets or cells. Rotation of the impellor when the engine is running causes the oil to be circulated in the cells in the form of a vortex; kinetic energy is imparted to the oil by the impellor and is, in turn, given up by the oil to the driving member which is therefore also caused to rotate. There is thus no direct mechanical connexion between the impellor and the driven member; hence the action of the fluid coupling is extremely smooth. It is generally used in conjunction with a pre-selective gear box.

Large cars may have six-cylinder-in-line engines, or eight-cylinder engines with the cylinders either in line or arranged in two blocks of four in V formation.

loads it is common to use six- or eight-wheelers, that is, vehicles with three or four axles. When three axles are used the two rear axles are usually both driving axles. Vehicles with four axles have two at the front, the four wheels all steering, and two at the rear.

Many commercial vehicles have servo-motors to supplement the driver's foot pressure on the brake pedal. See Brake, p. 1372.

**TAXATION.** Under the 1896 act, motor cars were taxed by weight, but under the 1903 act taxation consisted of a nominal registration fee. The Finance Act of 1909-10 taxed vehicles according to engine power, as determined by R.A.C. formula, and varied from £2 2s. for up to 6½ h.p. to £42 for cars over 60 h.p., plus petrol tax of 3d. per gallon, increased to 6d. during the First Great War. The Finance Act of 1920 repealed the petrol tax and substituted a tax of £1 per h.p. by R.A.C. rating. In 1928 the petrol tax was reintroduced. After an experiment in 1947 of taxing cars first registered that year by cubic capacity, a flat rate of £10 was introduced, 1948, for all cars first registered in 1947 or later. The budget of 1952 made the tax £12 10s. on all cars, irrespective of their weight or horse-power.

**MOTOR VEHICLE LAW.** Under the Road Traffic Acts motor vehicles are defined in Great Britain as mechanically propelled vehicles intended or adapted for use on roads, and are classified as heavy or light locomotives, motor tractors, heavy motor cars, motor cars, invalid carriages, and motor cycles.

Heavy locomotives, light locomotives, and motor tractors are vehicles which may draw trailers but not carry loads themselves. The vehicles that carry loads are heavy motor cars (weight exceeding 2½, 3, or 3½ tons, depending on circumstances) and motor cars (weight not exceeding 2½, 3, or 3½ tons). An invalid carriage is a vehicle not over 5 cwt. in weight designed and constructed for a disabled person. A motor cycle is a vehicle not over 8 cwt. which has fewer than 4 wheels, and is not an invalid carriage.

Regulations prescribing the construction and use of vehicles are frequently amended, and often the amendments do not apply to vehicles registered before some specified date or apply to them only after a lapse of time. The regulations applicable to construction include the following, subject to many exceptions: parking brakes (except motor bicycles and invalid carriages); a speed indicator (exceptions include invalid carriages and certain motor cycles); a driving mirror (exceptions include motor cycles); a windscreen wiper (unless driver can see ahead without looking through windscreen); a warning instrument (not a gong, bell, or siren except in certain official vehicles, e.g. police cars); a silencer; safety glass in the windscreen and (passenger vehicles and estate cars)

all outside windows (goods vehicles), windscreen and windows in front and on either side of driver's seat: direction indicators or stop lights must be of certain types; efficient brakes.

All vehicles, trailers, and their parts and accessories, and the load carried, shall be in such a condition that no danger is likely to be caused. Windscreen wiper, speed indicator, brakes, steering gear, tires, and glass must be properly maintained. There must be no excessive noise due either to any defect in the vehicle or to the way it is loaded; the engine must be stopped when the vehicle is stationary, except when held up in traffic, or when it is necessary to have the engine running to examine it because of some breakdown. No warning instrument may be sounded when a vehicle is stationary, or between 11.30 p.m. and 7 a.m. in a built-up area. The vehicle must not be reversed for a greater distance than is reasonably necessary, and it must not cause any unnecessary obstruction of the road. The driver must always be in a position in which he has proper control of the vehicle and a full view of the road and traffic ahead. A vehicle must not be left unattended unless the engine is stopped and brakes have been applied. At night vehicles must stand only on the near side on the edge of the road unless in a parking place or one-way street.

#### Further Regulations

The front lamp on a stationary vehicle must not in general exceed 7 watts—*i.e.*, headlights must be extinguished. If a television set is fitted neither it (nor its reflection) must be visible to the driver, and the controls (except the sound volume control and main switch) must not be within his reach. If one vehicle tows another, the tow rope must not be more than 15 ft. long, and must be made easily distinguishable. Vehicles may be compulsorily tested; and in 1958 it was proposed that vehicles over 10 years old should not be driven unless they have been tested.

It is illegal to sell a vehicle in a condition not complying with the regulations.

Before a motor vehicle may be driven on the public road, it must be registered and licensed; the driver must hold a driving licence; and there must be an insurance against certain third party risks.

*Registration.* The vehicle is registered by the local council when

it is first licensed and receives an identification mark consisting of an index mark made up of a series of letters and a registration number. The identification mark must be on a plate of prescribed size and must be clearly exhibited on the front and rear of the vehicle. A registration book is issued to the owner and must be produced on request to a police officer or local taxation officer. If the vehicle changes ownership, the book is handed to the new owner who sends it to the council; the old owner must also notify the council. Any alteration to the vehicle which makes the details in the book inaccurate must be notified.

#### Hire Purchase Owners

The fact that a person holds a registration book in which he is described as the owner of the vehicle does not prove that he is, legally, the owner; *e.g.*, when a vehicle is on hire purchase, the hirer having no right to dispose of it, the hirer will nevertheless appear as the owner.

*Licensing.* Mechanically propelled vehicles (with a few exceptions) must be licensed. The licence must be obtained from the local council and must be affixed to the vehicle. A certificate of insurance must be produced before a licence will be issued. When a vehicle is sold the licence may be transferred to the new owner. The cost of a licence varies with the type of vehicle. Licences are normally issued for the calendar year, but may be taken out for certain parts of the year. Vehicles used for the carriage of goods for reward or in connexion with any trade or business normally require appropriate additional licenses.

Motor manufacturers, repairers, and dealers can obtain either a general, or a limited, trade licence. This may be affixed to any vehicle while that vehicle is in use. A vehicle with a general trade licence may be used for any purpose connected with the business of a motor manufacturer, repairer, or dealer. A vehicle with a limited trade licence may be used only for certain specific purposes, *e.g.* for testing or trials after repairs or for the benefit of a prospective purchaser, or for delivery to a purchaser, and in general, not more than two passengers in addition to the driver may be carried, and these must be either employees or a prospective purchaser. In general no goods except a broken-down vehicle or ballast for testing the vehicle may be carried.

*Driving Licence.* No one may drive a motor vehicle on a road unless he holds a driving licence. Licences may be for all classes of vehicles or for some classes only. No one under 16 may drive any motor vehicle. Persons 16 or over (subject to a higher age being prescribed by regulations) may drive a motor cycle or invalid carriage, persons 17 or over may drive any class of motor vehicle except a heavy or light locomotive, a motor tractor (unless for agriculture), or a heavy motor car. A heavy or light locomotive, a motor tractor (unless for agriculture), or a heavy motor car may be driven only by persons 21 or over.

Driving licences are issued by the local county or borough council. In 1958 the fee was 15s. and the licence lasted for three years from date of issue. When application is made for a licence the applicant must make a declaration stating whether he is suffering from certain disabilities, such as epilepsy, or sudden attacks of giddiness, or any other disability which would make it dangerous for him to drive, and whether he can, with glasses if worn, read a number plate at a distance of 25 yards. If he is suffering from certain disabilities, *e.g.* loss of a hand or foot, he has a right to demand to be submitted to a special driving test with a right to appeal to the magistrates' court; certain other disabilities, *e.g.* epilepsy or bad eyesight, make an applicant ineligible for a licence, or for a test.

No one can obtain a licence unless within the previous ten years he has either passed the ordinary driving test or held a licence. A person convicted of dangerous or careless driving or of driving while under the influence of drink or drugs may be prevented from driving until he passes the test even if he has already passed it.

#### Provisional Licence

A person proposing to take a driving test obtains a provisional licence valid for six months. The holder may drive the vehicle (unless it is a vehicle, other than a motor car not constructed or adapted to carry more than one person) only when he has with him someone who has held a licence for two years or has passed the test. A pillion passenger must not be carried on a solo motor-cycle driven under a provisional licence unless the passenger has held a licence for two years or passed the test. The vehicle must have an



"L" sign affixed. If a person fails the test he may not attempt it again until a month has elapsed. There are provisions to prevent persons from obtaining a succession of provisional licences and never taking the test.

Every person driving a motor vehicle must at the request of a police officer produce his licence for examination either by the officer or, within five days, at some police station specified by the driver himself.

#### Insurance Rules

Under the terms of the Road Traffic Act, 1930, with certain exceptions (*e.g.* police cars), no motor vehicle may be used on a road unless it is covered by a policy of insurance or a security against the death or bodily injury of any person, except death or bodily injury (i) arising out of and in the course of the employment by the person insured of the person killed or injured; (ii) to persons being carried in the vehicle or entering or getting into or alighting from it unless they are carried for hire or reward or under a contract of employment; and (iii) liability under contract. The policy must also cover hospital expenses (up to £50 for an in-patient and £5 for an out-patient). An insurance certificate must be issued by the insurance company. A driver if requested by a police officer must produce his insurance certificate as well as give his name and address and the name and address of the owner of the vehicle, but if he is unable to produce his insurance certificate at that time he will not be guilty of an offence if he produces it within five days at some police station specified by him.

**Speed Limits.** The various limits of speed depend on factors such as the weight of the vehicle, whether or not it has a trailer, whether or not it has pneumatic tires, and whether it is constructed to carry only passengers. In general the ordinary private car and motor cycle and the estate car are not subject to any speed limit except in restricted areas. A car with a caravan is limited to 30 m.p.h. In built-up areas all vehicles are limited to either 30 m.p.h. or 40 m.p.h. In general a road is in a built-up area if there are lamp-posts not more than 200 yards apart; but this is not conclusive.

**Motoring Offences.** The most serious motoring offences are causing death by dangerous driving; dangerous driving; careless driving; road racing; driving

or being in charge while under the influence of drink or a drug; driving away a motor vehicle without the consent of the owner or other lawful authority; failing to stop when required by a police officer; failure to obey directions of a police officer controlling traffic, or any traffic sign; exceeding the speed limit. A person who when he is unfit to drive because of drink or drugs is in charge of a motor vehicle, but not driving it, is guilty of an offence unless he can show that there was no likelihood of his driving so long as he was unfit, and that he had not driven since he became unfit. Maximum penalties range from £5 for failing to stop when required by a police constable, to five years' imprisonment for causing death by dangerous driving. In addition, any court may, for a large number of offences, disqualify a driver from holding a licence. The court is bound by law, unless there are special circumstances, to disqualify a driver for at least a year for certain offences—*e.g.* driving under the influence of drink or drugs, or for road racing.

A person disqualified for more than six months may after a period varying with the length of the disqualification apply to have his licence restored. A person convicted of careless or dangerous driving or driving under the influence of drink or a drug may be disqualified until he has passed the driving test.

#### Licence Endorsements

A person may in a large number of offences have the conviction endorsed on his licence. A person whose licence has been endorsed on a conviction for exceeding the speed limit may after a year obtain a clean licence if he has had no further endorsements during that year and he held, or before he was convicted was entitled to, a clean licence or licence with only an endorsement for exceeding the speed limit. A person whose licence has been endorsed for a more serious offence may after three years obtain a clean licence if he has had no further endorsement for exceeding the speed limit more than a year before he applies for a clean licence.

**Pedestrian Crossings.** Pedestrians on uncontrolled crossings have precedence over vehicles if the pedestrian was on the crossing before the vehicle entered it. Vehicles must not in general stop on a crossing or (except pedal cycles without sidecars whether

or not power assisted) between the line marked on the road behind the crossing and the crossing itself. A pedestrian may not remain on the crossing longer than necessary.

**Accidents.** Where an accident occurs owing to the presence of a motor vehicle on the road and damage or injury is caused to any person (other than the driver of that vehicle), another vehicle, or animal not in that vehicle (which means any horse, cattle, ass, mule, sheep, pig, goat, or dog, but not a cat), the driver of the vehicle must stop and, if required to do so by any person having reasonable grounds for so requiring, must give his own name and address, and the name and address of the owner, and the identification marks, of the vehicle. If for any reason he does not give his name and address he must report the accident to a police officer or police station as soon as possible, in any event within 24 hours.

#### Personal Injury

Where the accident causes personal injury to some other person the driver must either produce his insurance certificate at the time to a police officer, or to some person having reasonable grounds for requiring its production, or he must report the accident and produce the certificate to a police officer or at a police station as soon as possible, and in any case within 24 hours. He will not be convicted for failing to produce the certificate if he produces it within five days at a police station specified by him at the time he reported the accident.

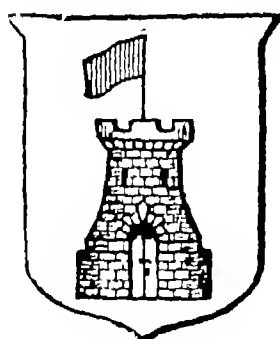
In addition to any criminal liability for, *e.g.*, careless or dangerous driving that a motorist may incur as a result of an accident in which he has been involved, he may also be made to pay damages to compensate any person who has sustained personal injury or damage to property by reason of the accident. The test of liability to pay damages is failure to take reasonable care. Suppose A's vehicle collides with B. If A is solely to blame he is liable for all the damage suffered by B, and cannot call on B to pay any part of his (A's) damage. A similar result follows if B is solely to blame. But if A and B were each partly to blame, even though one was much more to blame than the other, the amount each would recover is reduced according to the degree in which he was to blame.

**Lighting.** With certain exceptions, all vehicles must between half an hour before sunset and

half an hour after sunrise carry two white front lights (solo motor bicycles and invalid carriages one only) and two red rear lights and reflectors (solo motor bicycles one red light and reflector). There are exemptions, *e.g.*, for vehicles parked in certain places, and special provisions for vehicles with projecting or overhanging loads or towing or on tow or of unusual length or with trailers, for multipurpose lamps and combined lamps and reflectors, and reversing lamps. Regulations govern the position, character, and strength of lamps. Swivelling or deflecting lights are prohibited except for dipping headlights or front lights which may to a limited extent move with the front wheels in steering.

**Motor Vessel.** Sea-going ship powered by Diesel or Diesel-type compression engines using heavy fuel oil. The first of any size to go into regular service was the 1,000-ton *Selandia*, launched in Great Britain in 1912, since when motor vessels of considerable tonnage have been built for commercial purposes. Increasingly popular as fast cargo liners, they show economy of bunker space, rapidity of refuelling, and cleanliness. Their disadvantages against the steamship are that their engines require more maintenance, and, unless carefully designed in relation to the hull, are liable to cause excessive vibration. Power plants for early motor vessels were made in Switzerland; then came the German Krupp and M.A.N. engines. The first British marine Diesel was the Doxford opposed piston engine. The average motor vessel displaces 10,000 tons and has a speed of 16 knots. About one-fifth of the ships at sea in the mid-20th century were motor vessels.

**Motril.** Town of Spain, in the prov. of Granada. It stands on a small river about a mile from the



Motril arms

Mediterranean, 34 m. by road S. by E. of Granada. In a fertile district, where cotton, sugar cane, and sugar beet are grown, it has sugar mills and manufactures cotton, flour, soap, wine, and brandy. It exports dried figs, almonds, barley, etc., and there are antimony, lead, zinc, and copper mines in the neighbourhood. The ancient port of Granada, Motril includes Calahonda and the roadstead of Baradero. Pop. (1950) 23,420.

**Mott, Sir Frederick Walker** (1853–1926). British physician. He was born at Brighton, and received his medical education at University College and Hospital, London. A specialist in neurology and mental subjects, he was Croonian Lecturer at the Royal College of Physicians, 1900. He served in the R.A.M.C. during the Great War, and was consulting physician to Charing Cross Hospital. Among his publications are *The Brain and the Voice in Speech and Song*, 1910; *Nature and Nurture in Brain Development*, 1914; *War Neurosis and Shell Shock*, 1919. He was knighted in 1919, and died June 8, 1926.

**Mott, John Raleigh** (b. 1865). American evangelist. Born in New York, May 25, 1865, he assisted in



J. R. Mott,  
American evangelist

the formation of the student volunteer movement for foreign missions, and founded and became general secretary of the world's student Christian federation, 1895. General secretary of the international committee of the Y.M.C.A., 1915–32, he was president of the world alliance of the Y.M.C.A. in 1926, and from 1910 to 1941 chairman of the international missionary council, presiding at the world missionary congresses at Edinburgh, 1910, Jerusalem, 1928, and Madras, 1938. He was awarded a half share of the Nobel Peace prize in 1947, and was honoured by the governments of France, America, Japan, China, Italy, Poland, Sweden, and Finland. His many books include *Evangelisation of the World in This Generation*, 1900; *Future Leadership of the Church*, 1908; *World's Student Christian Federation*, 1923; *Liberating the Lay Forces of Christianity*, 1932; *The Larger Evangelism*, 1944.

**Motta, Giuseppe** (1871–1940). Swiss statesman. Five times president of the Swiss federation, he was born Dec. 29, 1871, at Airolo, Canton Ticino. He received his early education partly in Italy and partly in Switzerland, and later graduated in law at Heidelberg. At the age of 22 he was elected to the council of state, becoming a federal councillor in 1911. For the 28 years during which he held cabinet office he dominated Swiss politics; and he was president in 1915, 1920, 1927, 1931, and 1937.

In 1920 he was appointed foreign minister and his country's chief representative at the League of Nations. He died Jan. 23, 1940.

**Motte.** Central mound sometimes found within the walls of a castle and characteristic of a Norman fortress. From an encircling ditch earth was removed to raise a platform, the bailey enclosed within a palisaded bank, and also a mound on which the commander's tower stood. Motte-and-bailey earthworks were erected on the site of Cardiff Castle *c.* 1090.

**Mottistone, John Edward Bernard Seeley, 1st Baron** (1868–1947). British politician.

Born May 31, 1868, and educated at Harrow and Trinity College, Cambridge, he was called to the bar in 1897. Liberal M.P. for Isle of Wight, 1900–06, and during 1923–24, he represented Abercromby div., Liverpool, 1906–10, and Ilkeston div., Derby, 1910–22. Under-secretary for the colonies, 1908–10, and under-secretary for war, 1911, he was secretary for war, 1912–14. After serving in the First Great War, he was under-secretary for air and president of the air council, 1919. He was raised to the peerage, 1933. His publications included *Adventure*, 1930; *Fear and Be Slain*, 1931; *For Ever England*, 1932; *Oaths of Happiness*, 1938. He died Nov. 7, 1947, and was succeeded by his son, Henry John Alexander Seeley (born May 1, 1899).

**Motto.** In heraldry, short, pithy sentence, sometimes a single word, usually placed on a scroll beneath the coat of arms or crest, or round the shield. They were personal to the bearer, but were commonly perpetuated in families.

The motto differs from the *Guerre*, war cry, or slogan, which is placed on a scroll above the crest or badge. *See Heraldry.*

**Mottram, Ralph Hale** (b. 1883). British novelist. Born at Norwich, Oct. 30, 1883, he was educated at Lausanne, and worked in a bank for many years. He established his reputation with



Lord Mottistone,  
British politician



R. H. Mottram,  
British novelist



The Spanish Farm, 1924 (awarded the Hawthornden prize) which with *Sixty-Four*, *Ninety-Four*! 1925, and *The Crime at Vanderlynden's*, 1926, formed a trilogy, describing life in Flanders during the First Great War. Mottram's later novels included *Our Mr. Dormer*, 1926; *The English Miss*, 1928; *Early Morning*, 1935; *The World Turns Slowly Round*, 1942; *Visit of the Princess*, 1945; *One Hundred and Twenty-Eight Witnesses*, 1951. He also wrote lives of John Crome, 1931, and of Buxton the Liberator, 1946; and *The Window Seat* (memoirs), 1954.

**Motza.** See Matsoth.

**Mouflon** OR MOUFELON. Species of European wild sheep, *Ovis aries*, found only in Corsica and Sardinia. It is about 28 ins. high at the shoulders, and the wool of the upper parts is reddish brown, with white on the underparts. There is marked difference between the summer and winter coats. In the winter the neck and chest are additionally protected by masses of shaggy hair, this being shed at the approach of warmer days. The massive curved horns of the male sometimes reach three feet in length; the ewe is without horns. The animals occur in flocks on the highest peaks of the hills and are very difficult to approach, because of their timidity and the agility with which they leap.

**Moujik.** Russian peasant, from the Russian *muzhik*. The word was formerly used to describe a loose fur cloak worn by ladies, similar to those worn by Russian peasants. *Pron.* moo'-zhik.

**Mould.** Collective term for any fluffy or cushiony growth of fungi appearing on dead or decaying vegetable matter—especially if damp, e.g. leather, bread, fruit, etc. Such fungi are nearly always in the "imperfect" stage, i.e. they reproduce almost exclusively by asexually formed spores and rarely form sexual organs. Examination under a lens or microscope shows a dense mass of tangled threads (*hyphae*) which constitute the fungus body or *mycelium* and from this there generally arise a number of upright *hyphae* bearing spores either enclosed in a sporangium or in chains at the tip of the *hyphae*. Some moulds have now been shown

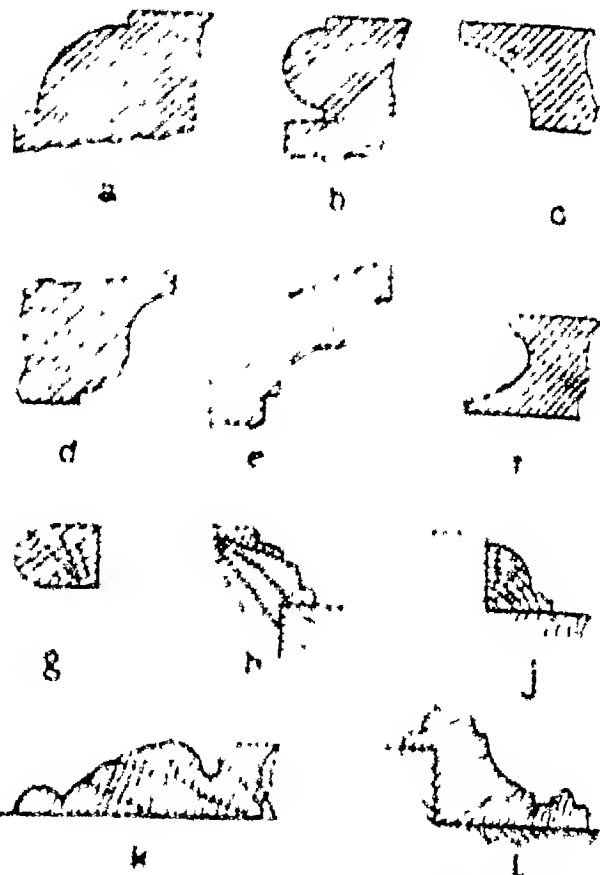
to be stages of sexually-reproducing fungi principally Ascomycetes. The commonest moulds are the green moulds, i.e. species of *Penicillium*, some of which assist in the "ripening" of cheese such as gorgonzola, and others can cause fermentation in sugary liquids; decaying fruit is generally covered with brownish cushions of *Monilia*; the black pin mould *Rhizopus* and the white mould *Mucor* occur on jams, bread, decaying vegetables, etc. Moulds are not confined to an aerial habitat, but also occur in aquatic situations. The most familiar example is probably the white "fur" that often develops on fish—particularly if kept in small jars with infrequently changed water. This is a species of *Saprolegnia*, but there are a number of other water moulds which may attack many forms of water life. See Fermentation *Penicillin*.

**Mould.** Piece of apparatus used for shaping molten or plastic material by the process of casting. Metals may be made into suitable shapes by heating them until they are completely

liquid; the liquid metal is then poured into a mould, which is so formed that when it is removed it leaves the cast metal in the desired shape. The mould is provided with a "runner," down which the metal is poured, and a "riser," so that the air may be completely displaced: the pieces of metal solidified in these spaces are attached to the casting and they must be cut off before the article is ready for use. Moulds are made from carefully selected and graded sands, which are first sieved into the mould boxes. See Bronze Statuary; Casting; Foundry; Glass; Plaster Cast; Plastics.

**Moulding.** In architecture and joinery, the surface formed on any piece of stone, timber, or other material by casting or cutting according to a continuous pattern; by extension, the piece of material so moulded. The mouldings in Greek architecture have been elaborately classified as the ovolo, ogee, cyma recta, torus, scotia or trochilus, cavetto, astragal, and fillet or annulet. The cyma recta and cavetto were mainly used as purely decorative finishings; the ovolo and ogee as supports to other members of the composition; the torus

and astragal for the tops and bottoms of columns; the scotia as a means of separating one part of a base from the other; the fillet for every kind of architectural profile.



Moulding. Types in use in architecture and joinery. a, ovolo; b, torus; c, cavetto; d, ogee or cyma recta; e, cyma reversa or reverse ogee; f, scotia; g, head; h, solid or "laid-in" moulding contrasting with i, stuck or planted moulding; k, compound moulding, quirk, ovolo and bead; l, bolection moulding.

Roman and Renaissance forms of moulding were based on the Greek, and certain classic mouldings were adopted by the Gothic architects, who used mouldings of every description lavishly. The medieval mason worked according to a system almost as rigid as the classical one, though the far greater variety drawn upon might point to a contrary conclusion. In Britain Norman architects usually used the plain cylindrical roll; but the introduction of the pointed arch and lancet windows opened the way for numbers of new forms. These were employed so systematically at different points that the dates of certain Gothic buildings can be told from the mouldings alone. Early English mouldings, which include the roll, fillet, and dog-tooth, are generally of finer workmanship than those of later date. Perpendicular work is flatter and harder. See Panelling.

**Moulin Rouge, La** (Fr., the red mill). Parisian place of amusement. Situated in the Boulevard de Clichy, and built on the site of the old Bal de la Reine-Blanche, it was opened Oct. 5, 1889, and destroyed by fire Feb. 28, 1915. A spacious establishment, attached to which was a magnificent garden, its daily programme included a concert, followed by dance music. The Moulin Rouge owed its name to



Mouflon. Ewe and lamb of the Corsican wild sheep.

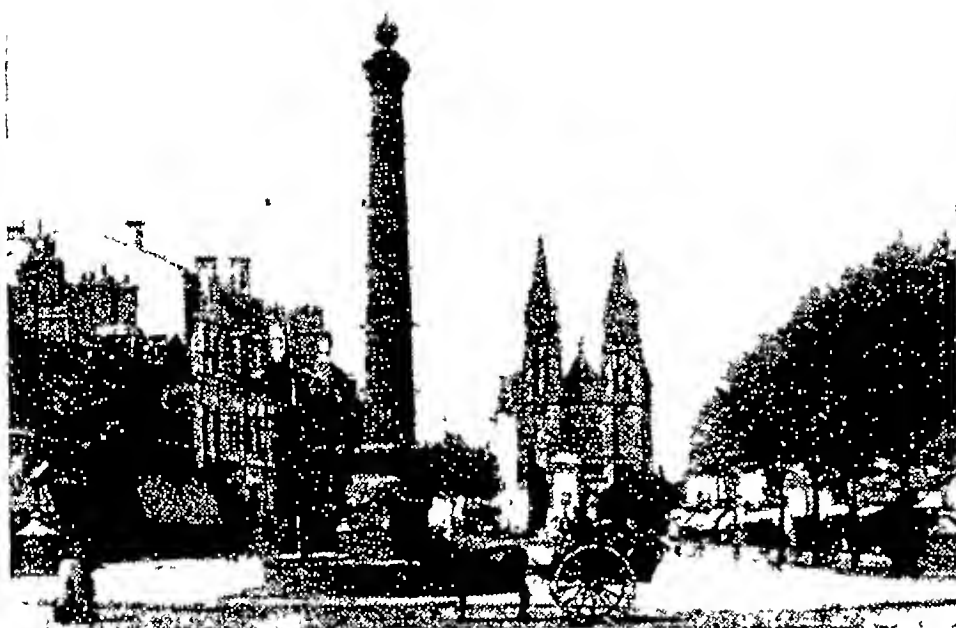
the windmill which towered above the entrance, the sails of which were illuminated by red lights. Rebuilt in 1921, it remained open throughout the Second Great War, and is still unique among Parisian entertainments.

**Moulins.** City of France. The capital of the dept. of Allier, it stands on the river Allier, 36 m. by rly. S.S.E. of Nevers, and is a rly. junction. Cutlery, textiles, hats, and glass are the chief manufactures. The Gothic cathedral of Notre Dame has two fine towers. Its choir was originally the chapel of the castle, and the chief of its many treasures is a beautiful triptych. The church of the Sacré Coeur is modern. Other buildings include the town hall, palais de justice, and a 15th century belfry. There are remains of a castle, once the residence of the Bourbon family. Therein is a museum containing the famous Bible, dating from 1115, from the priory of Souvigny. Moulins was the capital of the Bourbonnais during 1368-1527. Pop. (1954) 24,437.

**Moulmein** OR MAULMAIN. Seaport of Burma, in the Amherst dist. It is situated near the mouth of the Salween, sheltered by Bhilu Island from the Gulf of Martaban, but is rainy during the monsoon. In 1824 it was a

fishing village, but it is now the second port of Burma, with a great export of teak floated in rafts down the Salween, and of rice. It has connexion by rly. with Pegu and Rangoon.

Raided by Japanese aircraft in Jan., 1942, Moulmein was evacuated by British forces on Jan. 31. The town remained in enemy



Moulins, France. Place d'Allier, looking towards the church of the Sacré Coeur

hands until the surrender of the Japanese forces in Burma on Sept. 13, 1945. Pop. (1955 est.) 101,720.

**Moulting.** Name given to the periodical shedding of the outer covering of animals. The period is essentially one of growth, for the shedding of the old coat is due to the beginning of the growth of the new. It is best known

in the birds, which usually shed and renew their feathers after the nesting season. This is apparently a time of ill-health and of strain on the constitution, and birds are usually silent and inactive during it. Moulting is also seen in the periodic shedding of the carapace in growing crustaceans, in the sloughing of the skins of snakes, and in the shedding of the skins of myriapoda, spiders, and insects, the process being known as ecdysis. Many mammals also shed their hair in the spring and grow a thicker coat again at the approach of winter. See Animal Mammal.

**Moulton,** RICHARD GREEN (1849-1924). Anglo-American man of letters. Born at Preston, Lancashire, May 5, 1849, he was educated at Christ's College, Cambridge, and

London university. He was a university extension lecturer, 1874-90, and in 1891 he settled in the U.S.A. In 1892 he was made professor of English literature at Chicago, and in 1901 head of the department of general literature. A scholarly interpreter of Shakespeare, he wrote Shakespeare as a Dramatic Artist, 1885, 3rd ed. 1897; Shakespeare as a Dramatic Thinker, 1907; The Modern Study of Literature, 1915. He was also responsible for a rearrangement of the Bible according to modern ideas. He died Aug. 15, 1924.

**Moultrie.** City of Georgia, U.S.A. and co. seat of Colquitt co. Situated in the S. part of the state, it is served by the Georgia and Florida, the Atlanta, Birmingham and Coast, and other rlys. It is the trading centre of a farming area and has cotton mills, sawmills, and meat-packing plants, and makes turpentine and clothing. It was founded in 1856 and incorporated in 1859. Pop. (1950) 11,639 of whom about 40 p.c. are negroes.

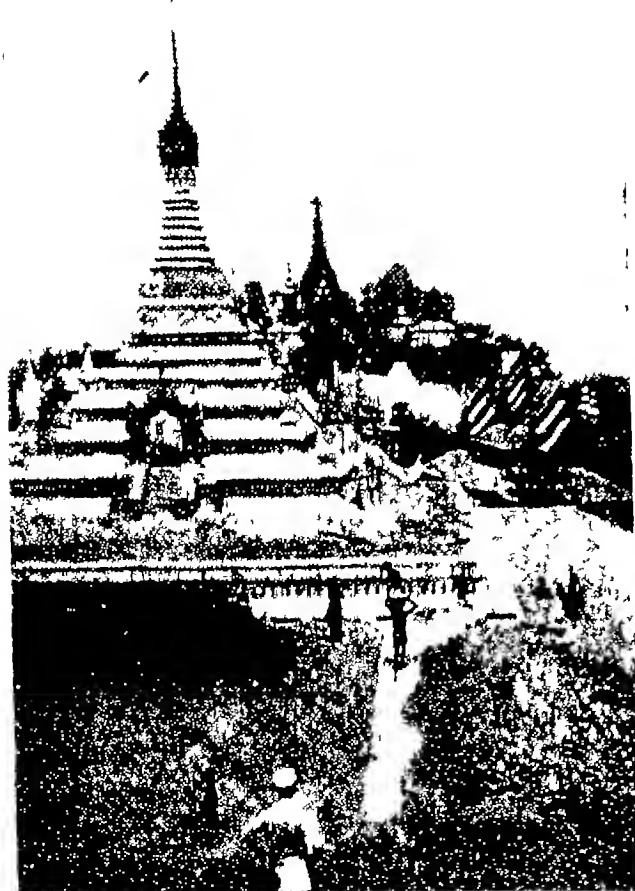
**Mound.** Hillock of earth or stones, especially when heaped up artificially. In the Mississippi basin and the American Gulf states are numerous pre-Columbian structures by aboriginal agricultural peoples, hence called mound-builders. The mounds are conical, pyramidal, animal-shaped, or mural. Their use was sepulchral,

or ritual, domiciliary, or defensive. The conical grave-

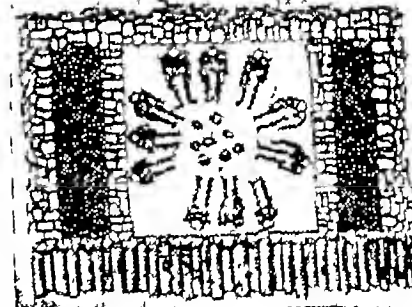
mounds, 6 ft. to 300 ft. across, and up to 100 ft. high, resemble the European barrow and tumulus. The largest, at Grave Creek, Moundsville, W. Virginia, 320 ft. across, 79 ft. high, has two stone-capped timber chambers; one with two skeletons, the other—30 ft.

above it—with one. Among the contents of the graves were shell beads and copper bracelets.

Cahokia mound, Illinois—the largest U.S. earthwork—is 1,080 ft. by 710 ft., 99 ft. high, and surrounded by about 70 lesser mounds. Etowah mound, Georgia, is 380 ft. by 300 ft., 61 ft. high. The effigy mounds, mostly in Wisconsin, represent panthers, turtles, birds, and other forms, often associated with mural earthworks up to 900 ft.

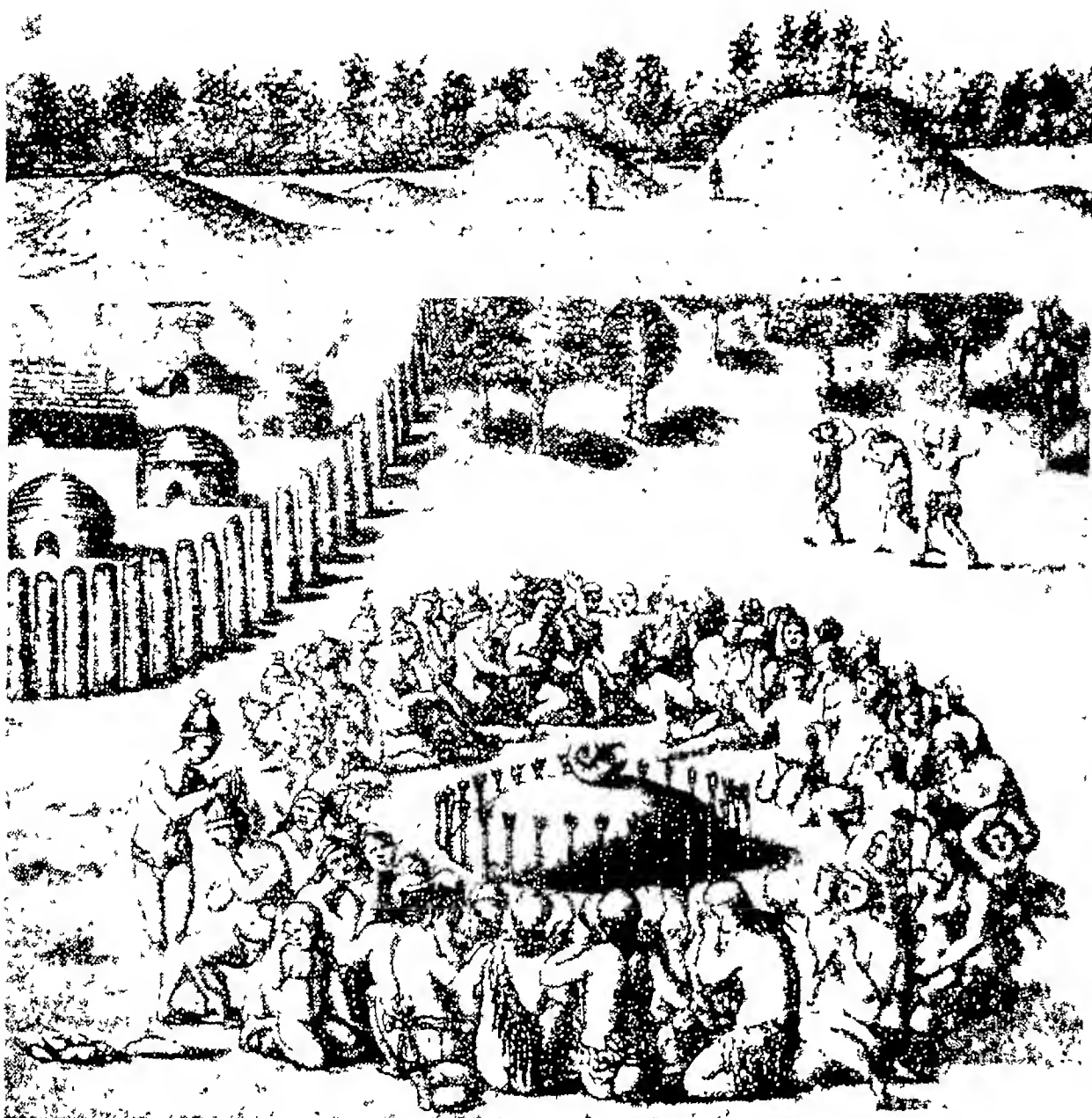


Moulmein, Burma. New and old pagodas, the former in foreground



Mound. Section and plan of a mound constructed by N. American tribes at E. Dubuque, Illinois. The vault measured 13 ft. by 7 ft. and contained 11 skeletons





**Mound.** Two further examples of mounds constructed by N. American tribes. Upper picture, Avondale mounds, Washington co., Mississippi, a typical series of mound tombs. Lower picture, burial of a chieftain, illustrated by De Bry (c. 1620). Tribesmen mourn around the mound, about the base of which arrows are stuck in the ground. On the mound is the chief's shell cup

long. The so-called Elephant mound bore a much-discussed effigy 140 ft. long. In Ohio the Serpent mound bore a sinuous embankment 4 ft. high, 1,330 ft. long; the so-called Alligator mound may represent a lizard. In Georgia two represent birds. The strongholds, comparable with British earthworks, notably in Ohio, exhibit remarkable precision in their geometrical forms. The trees on some mounds, when first observed by Europeans, date them at least two centuries before the discovery of America; some are undoubtedly older. The cultural remains point to immigrant influences from the W. which farther S. developed the Mexican *teocalli* and worship of serpent and sun. See *Tumulus*.

**Bibliography.** Mound-builders, J. P. McLean, 1879; Burial Mounds of the Northern Sections of the United States, Cyrus Thomas, 1887; Report on the Mound Explorations of the (American) Bureau of Ethnology, Cyrus Thomas, 1894.

**Mound Bird.** Popular name for the Megapodiidae, a family of game birds that deposit their eggs in mounds of decaying vegetable matter, where they are hatched by the combined heat of the sun and of the decomposition of their surroundings. There are about 15 species, found mainly in Australasia, notably the brush turkey.

**Moundville.** City of West Virginia, U.S.A., the co. seat of Marshall co. On the Ohio river, 11 m. S. of Wheeling, it is served by the Baltimore and Ohio rly., and river steamers. For the remarkable Indian burial mound after which the city is named, see Mound. Pop. (1950) 14,772.

**Mounet-Sully, JEAN** (1841-1916). French actor. He was born at Bergerac, Feb. 27, 1841, and made his first appearance as King Lear at The Odéon in 1868. From 1872 he was principal actor at the Comédie Française. He was regarded by connoisseurs as one of the greatest tragedians of the 19th century. He died in Paris, March 1, 1916.

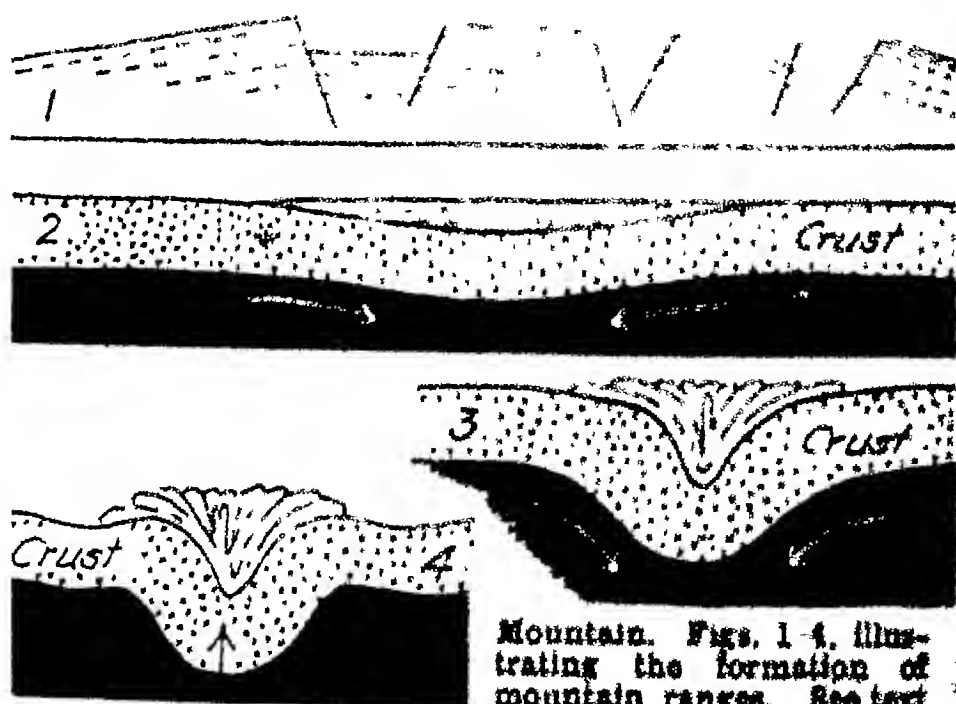
**Mount Abu.** The culminating point of the Aravali hills, India. It is in Rajasthan, 68 m. W. of Udaipur. It gives its name to a health resort which stands on its slopes at an elevation of 3,945 ft. There are two fine ancient temples

built of white marble by the Jains; they are held to be the finest extant specimens of Hindu architecture, and the older dates from the 11th century. The altitude of Mt. Abu is 5,650 ft.

**Mountain.** Term used, somewhat loosely, to describe an elevated portion of the earth's surface. Usage depends on local circumstances, and an isolated elevation of less than 1,000 ft. is often termed a mountain, though elsewhere ground well over that height may be referred to as hills.

Mountains have been formed by accumulation; by block faulting; by folding; by erosion. Mountains of accumulation are typically volcanoes (*q.v.*), where the cone or dome is built up of ashes and lava flows ejected from one or more craters. Some high mountains are of this type: Cotopaxi, 19,500 ft., in Ecuador; Orizaba, over 18,000 ft., in Mexico; Mts. Shasta and Rainier, both over 14,000 ft., and other peaks in the Cascade range of west U.S.A.; Elbruz, 18,467 ft., in the Caucasus; Vesuvius, 3,800 ft.; and island mts. such as Tenerife, 12,185 ft. and Mauna Loa, Hawaii, 13,780 ft. above sea level. The last rises from the floor of the Pacific with a depth of over 15,000 ft. making a total mountain height above its base of approx. 30,000 ft.

Block fault mountains are features resulting from the elevation or tilting of fragments of the earth's crust between faults (*q.v.*). The earth movements involved are more or less vertical, and while the elevated ridges are formed by uplift, the valleys either lie along



**Mountain.** Figs. 1-4, illustrating the formation of mountain ranges. See text

the line of faults between adjacent blocks, or along narrow down-faulted strips. The Basin ranges of the west U.S.A. and the flanking Sierra Nevada and Wasatch mts. have been formed in this way (Fig. 1). The Ruwenzori mts. of

E. Africa are a fault block lying between two rift valleys.

Folded mountains result from the compression of the earth's crust along long narrow belts, as in the Alpine-Carpathian-Hima-

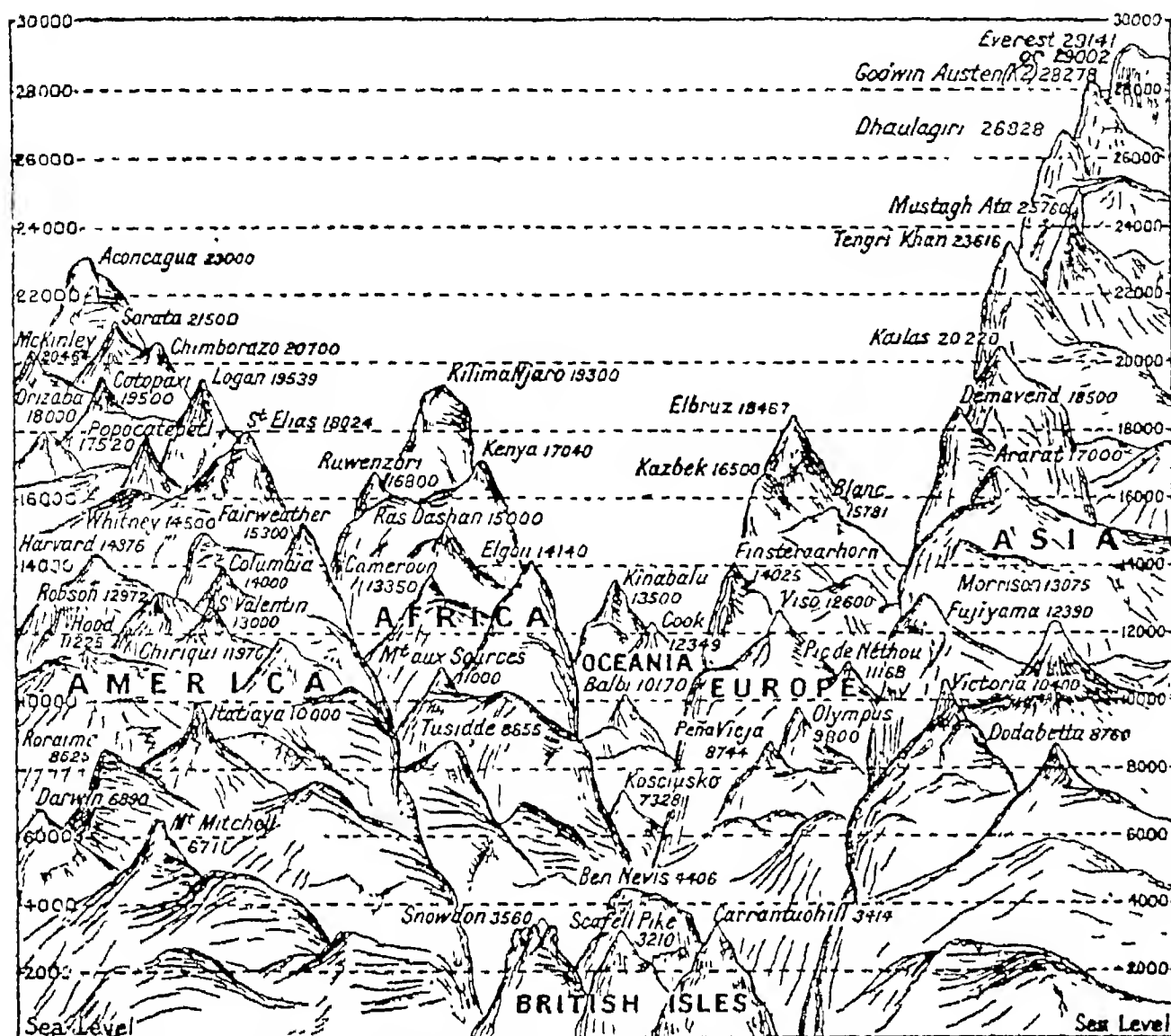
the deep-seated core of old ranges to be exposed on the present day earth's surface.

Most mountain ranges of today were formed during the recent Tertiary period, and folding is

develop on their upper slopes even near the equator, and vegetation and climate are profoundly modified in consequence. High ranges cause precipitation of moisture from damp air on their seaward slopes, so that the air which crosses the range is dry, with the result that the country on the leeward side is often semi-arid or even desert in character. Mountains form effective barriers to migration, and marked differences in racial and other characteristics are found in peoples living on opposite sides of such barriers. Napoleon considered them second only to deserts as obstacles to an army. On the other hand, old roads or tracks often followed along the open pasture lands which lay on the lower slopes of ranges, like the Pilgrims' Way on the S. Downs. Mountains have in the past acted as havens of refuge for persecuted people, and also for robber strongholds.

Appreciation of mountain scenery is hardly more than 200 years old. Before then mts. were viewed as excrescences on the earth's surface—places to be shunned. In 1761 De Saussure offered a reward for the first ascent of Mt. Blanc, and from that time the Alps have become fashionable and a steady tourist traffic to many mountainous regions has developed, a fact which has had profound influence on the economy of such naturally poor districts. See Alps; Earth Movement; Geology; Glacier; Himalayas; Mountaineering; Rock. Consult *The Face of the Earth*, vol. 1, E. Suess, 1904; *The Structure of the Alps*, L. W. Collett, 1936; *Volcanoes as Landscape Forms*, C. A. Cotton, 1944; *Principles of Physical Geology*, A. Holmes, 1944.

**Mountain**, THE (Fr. *La Montagne*). Name given to one of the political parties that rose in France during the Revolution. They first appeared, an offshoot of the Jacobins, in the national convention, 1792, the name being due to the fact that they sat, about 100 strong, on benches raised above those occupied by other groups. The Mountain included among its members Marat, Danton, and Robespierre, and under their leadership dominated the Jacobin Club. Their chief opponents in the convention were the Girondins, republicans too, but with more theoretical and less savage views, who were overthrown by the Mountain in 1793. The latter were responsible for the Reign of Terror. See French Revolution; Girondins.



Mountain. Diagram illustrating relative heights of the world's chief mountains

layan chains, and the ranges of western N. and S. America. It is considered probable that convection currents within the earth here exerted a drag on the crust so that it was buckled downwards and folded. In the early stages an elongated trough (geosyncline) in which sediments accumulate was formed by a slow downwarping movement (Fig. 2). Eventually the crust beneath the trough buckled relatively suddenly, and the upper part of the crust and the accumulated sediments were folded, crushed, and forced outwards (Fig. 3). In this way the crust became very considerably thickened locally, and, as it was lighter in weight than the substrata on which it rested, it tended to be buoyed up, and the folded sediments along the line of the buckle were raised up above the general surface level (Fig. 4). Erosion then attacked the folded pile and carved out valleys and steep slopes. At the same time it removed material from the upper parts of the range, and the mass as a whole was lightened, so the roots of the mountains tended to rise and lift the surface still farther, until the root had more or less disappeared. This combination of erosion and uplift caused

believed to be continuing in Indonesia. Old ranges, the root zones of which can still be traced, but which are now eroded to great depths, include the post-Silurian Caledonian mts. of Scandinavia, Scotland, the English Lake district, and Wales; and the Permo-Carboniferous Armorican mts. which ran from central France through Brittany, S.W. England, S. Wales, and S. Ireland.

Mountains formed by erosion have been carved from a plateau or other high level block of ground by the downcutting action of rivers or glaciers. Thus the Lake district hills of England were carved from an elevated domed tract, the elevation of which was relatively recent and had no connexion with the original folding that occurred there in the geological past. These mts. owe their relief not so much to the uplift as to the later erosion. Even modern folded mts. such as the Alps owe their precipitous slopes to erosion by frost, ice, and water; but their initial uplift was the result of folding processes.

Mountains exercise considerable influence on the lands and peoples in their vicinity. Local conditions approaching those of the Arctic





Mountain Ash. Flower and leaves of the tree also called the rowan

**Mountain Ash** OR ROWAN TREE (*Sorbus aucuparia*). Small tree of the family Rosaceae. It is a native of Europe, including Great Britain, and the Canaries, N. and W. Asia,

and N. America. Its leaves are divided into six to eight pairs of slender leaflets. The small creamy-white flowers are produced in numerous clusters, and are succeeded by bright scarlet fruits.

**Mountain Ash** (Welsh Aberpennar). Urban dist of Glamorgan-shire, Wales. It is 4 m. S.E. of Aberdare, and 18 m. N.N.W. of Cardiff, and stands on the Cynon, a tributary of the Taff. The urban district includes a number of mining communities, among them Mountain Ash itself, Abercynon, Ynysybwll, and Cwmpennar, that became populous with the opening of coalmines in the 19th century. Market day, Sat. Pop. (1951) 31,521.

## MOUNTAINEERING AS A SPORT

H. E. Kretschmer, late member of the Alpine Club

*An account of the nature of this exhilarating but hazardous sport, and the equipment necessary for it, as well as a history of its development. See also Alps; Everest; Himalayas; Matterhorn; Mont Blanc; Rock-climbing; Skiing, etc.*

Mountaineering is the art of ascending mountains. In its widest sense it embraces all forms of movement in mountainous country. The art lies in overcoming obstacles and perils safely, and with the greatest economy of effort compatible with the use of only a reasonable minimum of extraneous aids.

The weather in the mountains is more uncertain and changeable than in the plains. Surprising extremes of heat and cold may be experienced in a short space of time. Gales and blizzards may spring up with sudden violence. High winds, lightning, and mists become particularly dangerous on exposed ground. Mountains are subject to a continual process of decay and erosion which loosens pieces of rock, ice, and other matter. These may drop from ridges and other steep places, often just after the hottest part of the day. On high mts. there are usually some places which are under continuous bombardment by falling stones at certain hours of the day. Loose rock may also become dangerous to the unwary if used as support for hand or foot. Avalanches may occur where driven snow has been compacted into wind slab, where new snow has not bonded with layers of old snow, etc. Steepness, exposed aspect, bluffs of rock may be contributory causes of the instability of snow slopes. The imperceptibly slow, but constant, movement of glaciers, combined with unevenness of ground over which they flow,

causes the formation of crevasses which are often very deep, and may be hidden under treacherously insecure snow bridges.

Essential extraneous aids include weatherproof clothing and special footwear. In steep and exposed places a rope is necessary for safety. The use of oxygen apparatus to facilitate breathing at exceptionally high alts. (above 25,000 ft.) constitutes a borderline case of what is considered a reasonable mountaineering aid. All equipment should be bought from reputable specialists. Outer clothing should be of tough, closely-woven texture and it must allow complete freedom of movement. It must afford protection against wind. The boot soles should either consist of a special rubbery composition with moulded nail-like protuberances or be nailed. An ice axe is carried for cutting steps in ice and hard snow. When thrust into a slope it can be used to arrest a slip before it becomes a disastrous fall. It is also used for balance, for sounding snow, and as a belaying point for the rope. Climbing ropes and their uses are dealt with under Rock Climbing. To cross glaciers with hidden crevasses safely, roped parties of more than two persons are necessary.

For walking with security on ice slopes, ice claws or crampons are attached to the boot and this may save hours of step cutting. Dark glasses are essential to protect the eyes from ultra-violet rays reflected from snow at high alts.

Mountaineering proper is primarily concerned with overcoming the specific difficulties presented by some particular part of a mountain. The actual ascent is only a secondary objective. For this, rock climbing or snow and ice craft or both are required. The gymnastic exercises and dexterities of the sport are relatively easy to acquire, but acquisition of the essence of mountain craft, which is route finding, judging relevant objective and subjective conditions, and ability to move at all times with economy of effort, requires a long apprenticeship.

Mountaineering expeditions should be undertaken only by persons who are physically fit and capable of dealing with the difficulties to be encountered. Parties with insufficient knowledge and experience of mountains should engage a professional guide. In most countries there is a system of licensing to ensure the competence of local guides. Generally there are fixed tariffs for the services of a guide on particular ascents.

**HISTORY.** The earliest recorded mountaineering feats were of a military nature, such as the crossing of the Alps in 218 B.C. by Hannibal's army. Among others reported as early climbers are Philip III of Macedon (181 B.C.), and the emperor Hadrian (128 B.C.). Petrarch ascended Mt. Ventoux in 1336. Antoine de Ville was said to have climbed the rocks of Mt. Aiguille in 1492. Naturalists, clerics, and artists were the first promoters of mountaineering. In 1760 De Saussure, a French scientist, offered a prize for the first ascent of Mt. Blanc. This was gained by Michael Paccard and Jacques Balmat in 1786. Other important first ascents followed in the Alps—the Gross Glockner, 1800, the Ortles, 1804, the Jungfrau, 1811, and the Monte Rosa, 1855. From the 1850s the English played an important part in mountain exploration. The ascent of the three peaks of the Wetterhorn, 1854-55, by Alfred Wills marks the beginning of mountaineering as a sport. In 1857 the Alpine club was formed in London to enlarge "the community of feeling among those who in the life of the high Alps have shared the same enjoyments, the same labours, and the same dangers." Similar clubs were soon founded in other countries, and in 1939 European Alpine clubs had an aggregate membership of over 120,000.

John Tyndall, Charles Hudson, F. E. Tuckett, E. S. Kennedy,

Leslie Stephen, and other English mountaineers were the pioneers of mountaineering, the outstanding event of which was Whymper's conquest of the Matterhorn in 1865. Soon every major peak in the Alps had been climbed. A second generation of Alpine explorers, among whom Guido Rey, Mummery, Freshfield, Moore, Conway, Coolidge, the Zsigmondy brothers, Meier, Purtscheller, and G. Winthrop Young were foremost, set about conquering the old peaks by new routes with such effect that by the turn of the century Mt. Blanc, for instance, had been climbed by more than 20 routes.

The Caucasus, including the highest mts. in Europe, was first explored by Freshfield's party in 1868. Conway started the exploration of Arctic and Spitsbergen mountains, Whymper those of Greenland, Shackleton those of the Antarctic. The German, Wilhelm Reid, climbed Cotopaxi in 1872, Whymper climbed Chimborazo in 1880. In Africa Ruwenzori was scaled by the duke of Abruzzi and Mt. Kenya by Mackinder. The highest peak of N. America, Mt. McKinley, was not climbed till 1913. W. W. Graham's numerous Sikkim ascents in 1883 were the beginning of the Himalayan exploration. He was followed in 1892 by Conway's Karakoram expedition. Mummery lost his life in an attempt to climb Nanga

Parbat. Douglas Freshfield, the Workmans, the duke of Abruzzi, and T. G. Longstaff contributed greatly to the early exploration of the Himalayas. A British party climbed the 25,447 ft. summit of Mt. Ibi-Gamin (Kamet) in 1931, Americans climbed Minya Konka (25,256 ft.) in 1932. Annapurna, Nepal (26,493 ft.; 8,000 metres) was scaled in 1950 by a French expedition. Assaults by Americans on Mt. Godwin-Austen, or K 2 (28,278 ft.), by Germans on Nanga Parbat (26,629 ft.), and Kinchinjunga (28,146 ft.) by Frenchmen on Dhaulagiri (26,828 ft.) were unsuccessful. After many unsuccessful attempts the highest summit, that of Everest (*q.v.*), was reached on May 29, 1953.

Some of the technical terms used in mountaineering are: *Aiguille*, a rock spire or needle. *Alp*, a mountain pasture. *Arete*, a ridge. *Col*, a pass or the low point of a ridge. *Cornice*, a projecting mass of snow as on a ridge. *Couloir*, a gully. *Glissade*, sliding down on snow or ice. *Karabiner*, a metal snap ring through which the rope

may be passed for security. *Moraine*, rock and debris carried down of pushed out by a glacier. *Screes*, gravel-like collection of stones and rock chips covering slopes below gulley, steep rock faces, etc. *Verglas*, thin veneer of ice on rock.

**Mountain Gun.** Artillery unit formed for military operations in hilly country, or where wheeled carriages cannot travel. The guns and their mountings are carried on pack mules or by men. Generally the equipment makes about five or six mule loads, as a mountain battery has neither limbers nor wagons. The gun is jointed, so that the breech ring can be carried separately. The 3.75 in. gun howitzer can be unpacked from mule-back and assembled in 3½ minutes. It weighs about 1,450 lb. and divides into 6 loads. The gun fires a shell of 20 lb. and has a range of between 3 and 4 m.



Mountain Laurel in full foliage

**Mountain Laurel** (*Umbellularia californica*). Californian Sassafras, or spice bush. A tall evergreen tree of the family Lauraceae, and a native of

California, its alternate, lance-shaped leaves emit a strong odour like camphor. The greenish-yellow flowers are clustered in umbels. The name mountain laurel is sometimes applied to *Kalmia latifolia*. See American Laurel.

**Mountain Meadows Massacre.** Outrage committed by the Mormons, on Sept. 11, 1857. A party of 130 immigrants from Arkansas, with 40 wagons and over 200 horses and cattle, were passing through Utah territory to California, when they were attacked by Indians and Mormons in Indian disguise. In response to an urgent message for help, John Doyle Lee, a prominent Mormon bishop, with a number of followers, hastened to the spot. The immigrants, who had barricaded themselves behind their wagons, welcomed Lee as their saviour; but no sooner had the Mormons gained their confidence than at a signal from Lee a general massacre took place, only 17 infants, too young to inform, being spared. Although the Mormon church denied responsibility, evidence given at Lee's trial implicated the highest officials. Twenty years after the crime Lee was

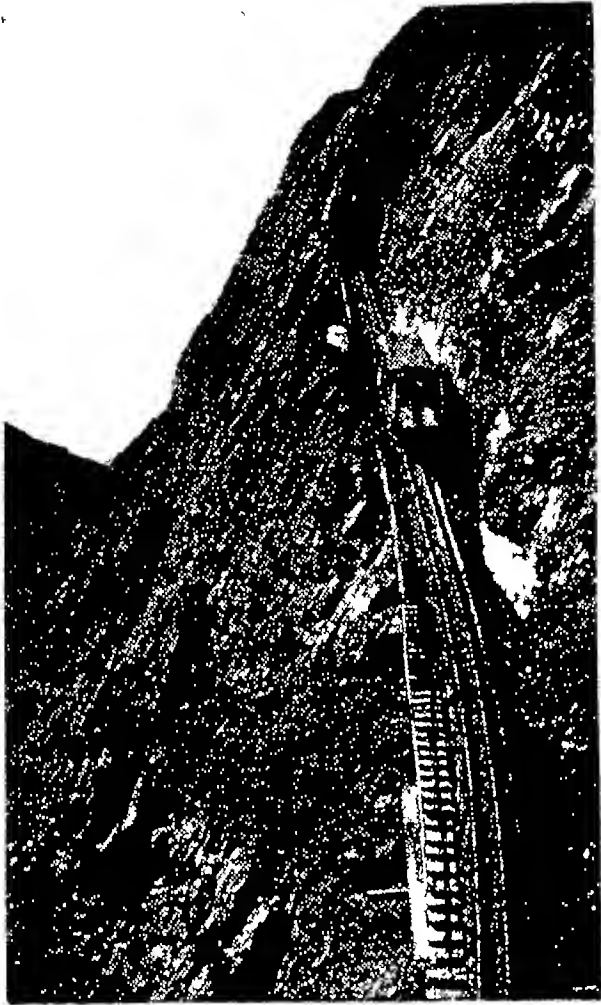


Mountaineering. Achieving two difficult ascents in the Swiss Alps. Left, a well-equipped climber negotiates a sharp crag; right, using an ice axe to secure a better foothold on a glacier in the Alpes des Grisons



brought to justice, and was executed at the scene of the massacre, March 23, 1877.

**Mountain Railway.** Term in civil engineering applied to lines on which the grip of the loco-



Mountain Railway. A rack railway up Mount Pilatus, Switzerland, with an average gradient of 1 in 3. The engine and carriage form a single car seating 32 people

tive's wheels on the rails is not sufficient to permit it to draw or push a train, so necessitating other means of obtaining the required adhesion. These are generally some form of rack, or central rail gripped by horizontal toothed wheels on the locomotive. Also included are the ladder rack, formed of bars; the locker rack, in which the teeth are on two sides of a central rail and the toothed wheels engaging them are horizontal; and the Abt rack, with two or three flat racks side by side, their teeth being arranged stepwise, so as not to come in line with each other. The modern form of motive power is electricity. There are mountain railways working on the tooth and rack principle at Mount Washington, U.S.A.; St. Illero, Italy; in the Harz mountains; and in the Bernese Oberland.

**Mountain Sickness.** Symptoms appearing in persons ascending into high altitudes. The symptoms appear at varying heights, in varying individuals, but generally at about 20,000 ft. They are caused by deficiency in the oxygen content of the air and so in the arterial blood, while the carbon-dioxide content remains the same. Breathlessness, lassitude, and nausea characterize the condition. In those remaining at a height for

some weeks the blood-forming organs show the strain of supplying extra red cells to carry what oxygen is available. Mental symptoms are frequent when rapid ascents are made, as in modern flying. Mental apathy may come on suddenly, judgement is badly disturbed, and in fighting, cowardice or dare-devilry may equally obtain. Ability to hear almost disappears. On touching-down memory is blurred and temper is irritable. Since symptoms are due entirely to shortage of oxygen they can be entirely avoided by the use of an adequate oxygen apparatus.

**Mountains of the Moon.** Alternative name of the Ruwenzori (*q.v.*) mountain range, in the region of the border between Uganda and the Belgian Congo. Herodotus mentioned them in 457 B.C. as containing the source of the Nile, and the name Mountains of the Moon was used for them by Ptolemy, A.D. 150. Ancient maps depicted them as a range running across the entire African continent from Abyssinia to the Gulf of Guinea. The origin of the Nile legend doubtless lay in the existence in the range of the source of the Ruamuli, a stream which runs into the Nile.

**Mount Allison.** University of New Brunswick, Canada. Founded in 1843 by C. F. Allison, it was at first a Wesleyan academy. In 1858 it obtained the right to confer degrees, and in 1913 took its present name. It is controlled by the

United Church of Canada, but is unsectarian. The buildings are at Sackville, N.B. There are engineering workshops for the school of applied sciences.

**Mount Auburn.** Cemetery in Cambridge, Massachusetts, U.S.A. It is 6 m. W. of Boston, on the Boston and Maine rly. Here are the graves of Longfellow, Lowell, Motley, Charles Sumner, Phillips Brooks, Oliver Wendell Holmes, and other famous Americans.

**Mount Barker.** Town in S. Australia. It is a rly. junction, 22 m. E. of Adelaide, on a plateau of Mount Lofty Ranges, in an agricultural and vine growing district.

**Mountbatten.** Name taken by the English members of the family of Battenberg (*q.v.*). In 1917 Louis Prince of Battenberg (1854-1921) renounced his title and was created marquess of Milford Haven; at the same time he, and also the children of his younger brother Henry (1858-96), took the name Mountbatten. The children of the 1st marquess of Milford Haven were Alice (b. 1885), who married Prince Andrew of Greece, and whose youngest child Philip (b. 1921) was created duke of Edinburgh on his marriage to Elizabeth, heir presumptive to the British crown, in Nov., 1947; Lady Louise Mountbatten (b. 1889), who married the crown prince of Sweden, 1923; George, the 2nd marquess (1892-1938); and Louis (b. 1900), created earl of Mountbatten (c.i.) 1947. See Philip, Prince.

## EARL MOUNTBATTEN OF BURMA

*A sailor by profession and inclination, and an administrator of marked ability in war and in peace, Lord Louis Mountbatten, great-grandson of Queen Victoria, proved himself one of the outstanding personalities of the Second Great War*

Louis Francis Albert Victor Nicholas was born on June 25, 1900, at Frogmore House, Windsor, youngest of the four children of Louis of Battenberg (1854-1921) and Victoria (1863-1950), a granddaughter of Queen Victoria. He was called Prince Louis Francis of Battenberg until 1917, when his father renounced his German princely title, took the name of Mountbatten, and was created marquess of Milford Haven.

Lord Louis Mountbatten, as Prince Louis Francis then became, inherited his father's love of the sea and ships, and in 1914 entered the R.N. as a cadet, passing through Osborne and Dartmouth and becoming a midshipman in 1916. He saw active service during the First Great War in the

battleships Lion and Queen Elizabeth, and in a submarine, and at the time of the armistice in 1918 was sub-lieutenant in command of a P-boat. After a course at Cambridge, Mountbatten accompanied his cousin the prince of Wales (later Edward VIII) during the latter's tours of Australia and New Zealand in 1920, of India and the Far East in 1921.

Mountbatten, a born leader, rose steadily in rank in the inter-war years. In 1932, as a commander, he was fleet wireless officer, Mediterranean fleet, and was known in the service as the author of technical and linguistic manuals. His first command was of H.M.S. Daring, a destroyer, in 1934; he was at the Admiralty in 1936, and was promoted captain 1937.

At the outbreak of the Second Great War, he had just taken command of the new flotilla-leader Kelly and of the 5th destroyer flotilla. In May, 1940, he brought home the Kelly (already the survivor of a mine in Dec., 1939) after she had been torpedoed in operations off the German coast; she had been four days in tow. While the Kelly was under repair, Mountbatten transferred to the Javelin; she was also torpedoed (in the English Channel, Nov., 1940), but was brought safely to port. The Kelly met her end in a dive-bombing attack off Crete in May, 1941, Mountbatten being among the survivors picked up. He was awarded the D.S.O. for gallantry in these actions.

His next command, the carrier *Illustrious*, was short-lived, as on Oct. 19, 1941, he was appointed adviser on combined operations (in succession to Sir R. Keyes), becoming chief of combined operations, March 18, 1942, with the acting rank of vice-admiral and the honorary rank of lieut.-gen. and air marshal. Lord Louis directed a number of commando raids on the coasts of German-occupied Europe—notably that on Dieppe, Aug. 19, 1942—and following consultation with U.S. service chiefs in Washington (June, 1942) perfected the British plans for the Allied landings in N. Africa in November.

Mountbatten's appointment as supreme allied commander in the newly created S.E. Asia theatre of war was announced, Aug. 23, 1943, at Quebec after an inter-Allied conference there between Churchill, Roosevelt, and Soong (representing China). He was given the acting rank of admiral. The success of the "Supremo," as he was called by those under his command, in both the strategic and political spheres was complete. His h.q. was truly Allied; his fighting troops included Indian, Gurkha, and Chinese, British and U.S. formations. Constantly on the move. Mountbatten would be one day at a commanders' conference and the next flying to speak to his front-line troops. As the tide of battle turned in S.E. Asia, it was his responsibility to institute military govt. pending the reintroduction of civil administration.

During July, 1945, Mountbatten spent the 12th-14th with MacArthur in Manila, and on the 25th arrived in London after attending a conference of combined chiefs of staff at Potsdam. He was all ready for a combined operations descent on Malaya simultaneous

with the anticipated Allied invasion of Japan when the Japanese surrendered on Aug. 14. On Sept. 12 he received at Singapore the official surrender of all Japanese forces in S.E. Asia.



Mountbatten

Created viscount 1946, Lord Louis took the title Mountbatten of Burma. He remained in S.E. Asia until the command was dissolved (1946), when he was made K.G., promoted rear-admiral, and appointed to a Mediterranean command. In March, 1947, his selection as last viceroy of India was announced. As such he carried through the negotiations for the transfer of power from British to Indian hands. At the request of the govt. of the dominion of India, he was appointed its first gov.-gen. On the same day, Aug. 15, he received an earldom. He relinquished the office in mid-1948, after a term in which he had earned the respect and affection of India, and returned to the navy as flag-officer commanding 1st cruiser squadron. Fourth sea lord, 1950, he became c.-in.-c. Mediterranean of all N.A.T.O. naval forces except the U.S. 6th fleet in 1952 and was promoted admiral 1953. In 1955 he was made first sea lord, and in 1956 was promoted admiral of the fleet.

**Mount Bischoff.** Tin mine in Tasmania 90 m. W. of Launceston. Discovered in 1871, and once the richest in the world, it now produces only small quantities of tin. The township Waratah, 1 m. from the mine, has a pop. of about 1,000.

**Mount Carmel.** Bor. of Pennsylvania, U.S.A., in Northumberland co. It is 48 m. N. by E. of Harrisburg. Adjacent are 12 coal mines, some running 4 m. underground. Pop. 17,967. For the hill in Palestine see Carmel.

**Mount Desert.** Island of Maine, U.S.A., forming part of Hancock co. Lying to the W. of Frenchman's Bay, its surface is hilly, the highest elevation being about 1,500 ft. Its beautiful lakes and rugged coast make it a favourite summer resort. Among the places chiefly frequented are Bar Harbour on the N.E. coast, Southwest Harbour and Northeast Harbour at the mouth of Somes Sound, and Seal Harbour. Presidents Theodore Roosevelt and Taft had summer residences at Bar Harbour. The island is joined to the mainland by a bridge, and there is also ferry communication.

**Mounted Infantry.** Foot soldiers mounted on horses. They differed from cavalry in carrying a rifle as weapon, in the slower speed of their mounts, and in the fact that they only rode to action, generally fighting dismounted as infantry. The dragoons, as at first established in the 17th century, were mounted infantry. Napoleon unsuccessfully endeavoured to organize a similar body, and in both Russia and Prussia something of the kind was attempted. Some units usually referred to as cavalry were in reality mounted infantry, as those used in the American Civil War, 1862-64, and the Boers in the S. African War, 1899-1902, gave proof of the value of mobile infantry. The British had battalions of mounted infantry in the same war.

Before the First Great War the British had a scheme for the raising and training of definite units of mounted infantry, and a mounted infantry school was established at Longmoor. Trench warfare furnished little opportunity for their use in France. In Palestine and elsewhere, under different conditions, the Australian mounted divisions and others answered the description. The mechanisation of armed forces between the two Great Wars rendered cavalry and mounted infantry obsolete, as was proved by the inability of the Polish mounted divisions to impede the German advance during the Polish campaign of Sept., 1940. **Lord Mountevans, British sailor**



**Mountevans, EDWARDS RADCLIFFE GARTH RUSSELL EVANS, 1ST BARON (1881-1957).** British sailor and explorer, known as Evans of the Broke. The son of a barrister,



he was born Oct. 28, 1881. From Merchant Taylors' School he went to the training ship Worcester, and entered the Royal Navy in 1897. He served in S.Y. Morning, which went to the rescue of the Discovery at the South Pole, 1902-04, and was second in command of the British Antarctic expedition of 1909-13, taking command after the death of Scott. In 1912 he was promoted commander. During the First Great War he was twice mentioned in dispatches, and received the D.S.O. and special promotion to captain when his ship, H.M.S. Broke, took part with the Swift in a successful action against six German destroyers in 1917; in the course of the engagement Evans gave the historic order: "Stand by to repel boarders." In 1921 he was awarded Lloyd's medal for saving life at sea, specially struck in gold instead of the usual silver or bronze, for his gallantry (on the cruiser Carlisle) in bringing off survivors from the steamer Hong Moh in the China Sea. Evans commanded the battle-cruiser Repulse, 1926-27, and was rear-admiral

was on the outbreak of the Second Great War appointed London Regional Commissioner for Civil Defence, a post he held throughout the war. The recipient of many British and foreign decorations, he was created Baron Mountevans of Chelsea in 1945. He died in Norway, Aug. 20, 1957. Among his books were *Keeping the Seas*, 1920; *South with Scott*, 1921; numerous boys' books; reminiscences, *Adventurous Life*, 1946; *Arctic Solitudes*, 1953; and *The Antarctic Challenge*, 1955.

**Mount Gambier.** Town in S. Australia. It is situated near the Victorian border, 305 m. by rly. S.E. of Adelaide. Its volcanic soil makes it a rich grain producer. Pop. 10,000. Mt. Gambier is an extinct volcano of which much of the original crater cone has collapsed, leaving its S. portion as the present summit. Valley, Blue, Crater, and Leg of Mutton lakes have formed

he succeeded the earl of Essex as lord deputy in Ireland, in 1599. He suppressed the insurrection of O'Neill, earl of Tyrone, notably by his victory at Kinsale, Dec. 24, 1601, and after Elizabeth's death received the submission of Tyrone to James I. In April, 1603, he put down risings in Cork and the S.E. counties, leaving Ireland in the same year. He received the earldom of Devonshire and other rewards, and undertook diplomatic negotiations with Spain, 1604. The circumstances of his marriage, in 1605, with Lady Penelope Rich, who had long been his mistress, caused considerable scandal. Mountjoy died in London, April 3, 1606. *Consult Life, C. Falls, 1955.*

**Mount Lofty.** Range in South Australia, reaching 2,334 ft. At its foot lies Adelaide.

**Mount Lyell.** Mine in Tasmania. It is situated at Queenstown near the middle of the W. coast, and was first discovered in 1883. Worked first for gold, it has since developed into one of the richest of copper mines, yielding a large portion of the mineral output of Tasmania. It is worked by electric power derived from Lake Margaret since 1914 added to by supply from the state hydro electric system. Queenstown has a population of 4,000. *See Copper.*

**Mountmellick.** Market town of co. Laoighis, Irish Republic. On a small stream called the Owenass, 8 m. N. of Portlaoighis (Maryborough), and 50 m. S.W. of Dublin, it is on the rly. and is also served by the Grand Canal. It has a trade in agricultural produce, and tanning, malting, woollen and salt manufactures are carried on. The Society of Friends established a school here 1796. Market days Mon. and Sat. Pop. (1956) 2,564.

**Mount Morgan.** Town in Queensland. It is 23 m. by rly. S.W. of Rockhampton, and grew up as the centre for working Mount Morgan gold and copper mine near by—one of the richest in Australia. Pop. 7,500.

**Mount Palomar Observatory.** Astronomical observatory in California, U.S.A. It is situated at an altitude of 5,500 ft., and is 90 m. S.E. of the Mount Wilson (q.v.) observatory, with which it works in close conjunction. It houses a 200-inch reflector, which, when installed in 1947, completed the largest telescope in the world; its construction and erection

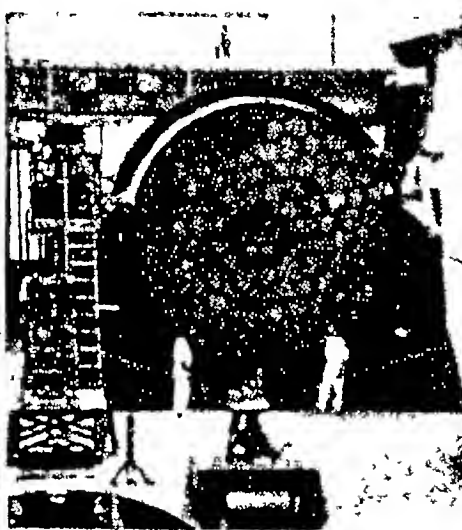


Mount Palomar Observatory, California. The interior of the dome showing the frame which holds the world's largest telescope; its 200-inch reflector is seen at top right

commanding the Royal Australian Navy, 1929-31. During 1933-35 he was c.-in-c., Africa station. In 1933, as acting high commissioner of Bechuanaland, he deposed the chief Tshekedi for the alleged flogging of a European; the case attracted much attention, and Tshekedi was eventually reinstated, but no blame was attached to Evans. In 1935 he was made c.-in-c., the Nore, and became a K.C.B. Having retired in 1939, he

chapter house, and some separate houses or cells.

**Mountjoy,** CHARLES BLOUNT, 8TH BARON (1563-1606). English administrator. He was educated at Oxford university, entering the Inner Temple, and about 1583 began to attract the favour of Queen Elizabeth. He sat as member for Beeralston, Devonshire, from 1586, and took part in the campaigns in the Netherlands and Brittany, 1586-93. Made K.G. in 1597,



in the hollows; Blue Lake, about 250 ft. deep, is at the foot of cliffs 250 ft. high. *See Crater Lake.*

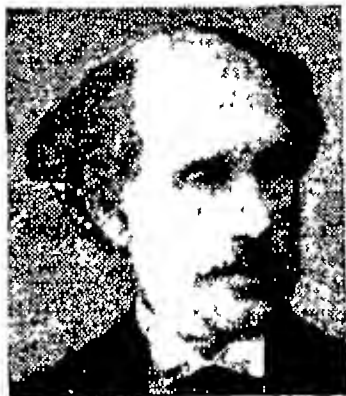
**Mount Grace.** Ecclesiastical ruin about 3½ m. from Northallerton, Yorkshire. It is the remains of a Carthusian priory, regarded as the most perfect of its kind in England. It was founded in 1397 and dissolved under Henry VIII. The existing buildings consist of the church and

had occupied 12 years. By its aid the moon can be brought within an apparent distance of 25 m. and nebulae 1,000,000,000 light years away have been photographed.

**Mounts Bay.** Inlet on the S. coast of Cornwall, England. It is an important pilchard fishing station, and contains St. Michael's Mount (*q.v.*). The bay is 21 m. across, with Penzance on the W. shore.

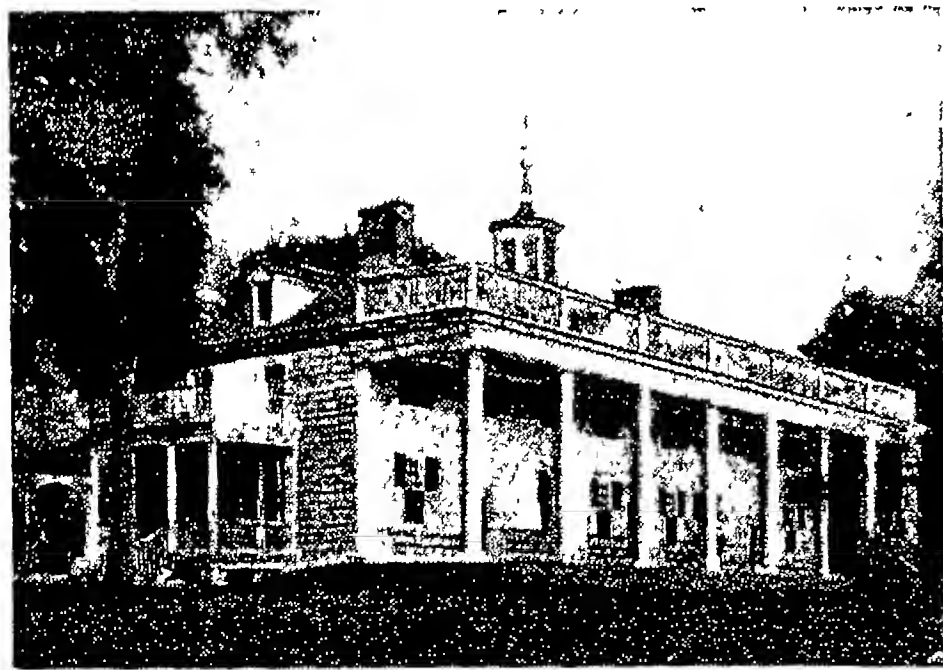
**Mountsorrel.** Market town of Leicestershire. It stands on the Soar, 4 m. from Loughborough, and 7 from Leicester. The rly. station is Sileby. In the vicinity are extensive granite quarries; other industries are boot and shoe, hosiery, and cardboard box manufacture. The chief buildings are two churches, one at North End and the other at South End, and a market house, dating from 1793. Pop. 3,500.

**Mount-Temple,** WILLIAM FRANCIS COWPER-TEMPLE, 1ST BARON (1811-88). British politician. Born Dec. 13, 1811, a younger son of the 5th earl Cowper, he was educated at Eton, and entered the house of commons as a Liberal in 1835. During 1846-55, he was



1st Baron Mount-Temple, British politician

in the Liberal and Coalition ministries; was vice-president of the council, 1857-59, and first commissioner of works, 1860-66. His mother married Lord Palmerston as her second husband, and he inherited Palmerston's Hampshire seat, Broadlands, taking the ad-



Mount Vernon, Virginia. House in which George Washington lived, now a national monument

ditional name of Temple. He was made a peer in 1880. Mount-Temple is chiefly remembered as the author of the Cowper-Temple Clause (*q.v.*). On his death, Oct. 16,

1888, his title became extinct. His estates passed to the Hon. Evelyn Ashley (1836-1907), whose son later took the name Mount-Temple.

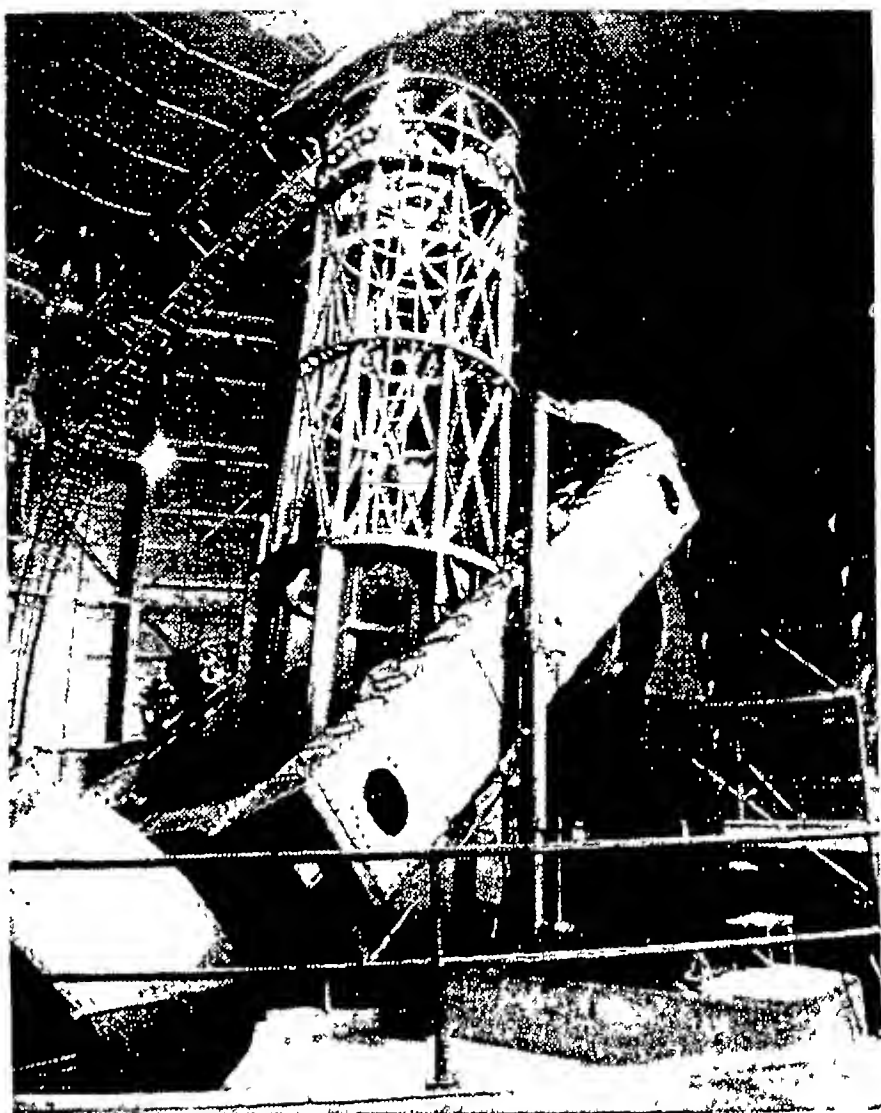
**Mount Vernon.** City of Illinois, U.S.A., the co. seat of Jefferson co. It is 75 m. by rly. E.S.E. of St. Louis, and is served by the Louisville and Nashville and other rlys. Its manufactures include lumber and machine-shop products. Settled in 1819, it was incorporated in 1837, and became a city in 1872. Pop. (1950) 15,600.

**Mount Vernon.** City of New York, U.S.A., in Westchester co. A residential and N. suburb of New York city, it stands on Bronx river, and is served by the New York, New Haven, and Hartford and other rlys. Machinery and clothing are manufactured. Dating from 1852, Mount Vernon was incorporated in 1853, and became a city in 1892. Pop. (1950) 71,899.

**Mount Vernon.** City of Ohio, U.S.A., the co. seat of Knox co. On the Kokosing river, 24 m. N.N.W. of Newark, it is served by the Baltimore and Ohio and the Pennsylvania rlys. It has engineering works, flour and sawmills, and furniture and glass factories. Natural gas and lumber are obtained locally. Organized in 1805, Mount Vernon was incorporated in 1845, and became a city in 1853. Pop. (1950) 12,185.

**Mount Vernon.** Village of Virginia, U.S.A., in Fairfax co. Standing on the Potomac river, 15 m. S. of Washington, it was the home of George Washington. The mansion in which he resided is a wooden two-storey building occupying an elevated position overlooking the river. A little distance away, on the edge of a wooded ravine, is the tomb containing the remains of Washington. In 1859, after both the government of the U.S. and the commonwealth of Virginia had

declined to purchase it, the estate, 200 acres in all, was bought by the Mount Vernon Ladies' Association of the Union, which is pledged to restore the mansion and its surroundings as far as possible to their appearance in Washington's time and to preserve them for future generations. Much of the furniture used by Washington and



Mount Wilson Observatory, California. The giant telescope, for 30 years the world's largest, which embodies a 100-inch reflector

family is in its rooms. The building and grounds are open daily to visitors, whose entrance fees meet the cost of maintenance.

**Mount Wilson Observatory.** Solar and astrophysical observatory 15 m. N.E. of Los Angeles, California, U.S.A. Founded in 1904 by G. E. Hale, it is controlled by the Carnegie Institution of Washington. It is situated on the forested top of Mt. Wilson at an altitude of 5,680 ft. Its equipment includes a 100-in. reflector, erected in 1917 and for 30 years the world's largest telescope; a 60-in. reflector; a large spectroheliograph, and much laboratory apparatus for spectroscopic work. Its work is chiefly concerned with solar physics, stellar motions and distances, and research on extragalactic nebulae and the structure of the universe. Situated above the cloud-line, it was ideally placed at its foundation, but since then the development of artificial lights in Pasadena, 8 m. to the S.W., has seriously affected some types of work. The observatory works in conjunction with Mount Palomar (*q.v.*) observatory.



**Mourne.** Mountain range of N. Ireland. In the S. of co. Down, it extends for 14 m. in a S.W. to N.E. direction. Slieve Donard, the culminating summit, attains 2,796 ft.

**Mourning.** Outward expression of sorrow, particularly for the dead. In the modern civilized world it takes the form of wearing black garments and using that colour in other ways, e.g. on writing paper. White is also a mourning colour, while purple or mauve is traditionally associated with mourning for royal personages, as well as for the so-called "half-mourning."

Mourning customs are usages and rites attending the public manifestation of sorrow for the dead. In primitive society some conventional signs of mourning denote a condition of taboo, or a desire to placate the ghost, or to avoid recognition, as with dishevelment. The most widespread demonstration of grief affects the raiment, which may be white, as in imperial Rome, Japan, and W. Africa; red, Gold Coast; blue, Turkey and Ancient Egypt; grey, Abyssinia; yellow, China; or black, Europe. The coat may be reversed, as with the Ainu. The material may be hemp, as in China; haircloth, the sackcloth of Gen. 37; network, as in Australia; or grass mantles, or white shell-necklets, as in Melanesia.

The body may be smeared with clay, mud, ashes, or black paint. The hair may be allowed to grow, or shorn and burned; it may be buried with the dead, or hung upon trees. Laceration as practised anciently, in Arabia and Scythia, and forbidden by Moses (Lev. 29), still endures, and special scarifiers may be used, as in Polynesia. Finger-amputation survives from Palaeolithic Europe. Wailing tends to develop a class of professional mourners, as with the Pueblo Indians, Semites, and Irish keeners.

In the English-speaking world, and to some extent elsewhere, the tendency of the 20th century has been to reduce the signs and time of mourning very considerably. The heavy crepe worn by widows in the Victorian era has almost disappeared, while the long periods, ex-

black-edged notepaper is much less common. Many bereaved families adopt no further sign of mourning than crepe sleeve bands or mere patches, and these are worn less as an ostentation of grief than as a tactful warning to strangers to avoid embarrassing topics of conversation. Generally, children do not wear mourning. In all this is seen the influence of the two Great Wars which not only made bereavement a common experience but demanded a less wasteful fashion. On the death of a royal personage a period of mourning for those attending court is prescribed, and instructions are issued about the clothes to be worn. These periods, too, have become noticeably shorter. See Africa; Burial Customs; Funeral Rites.

**Mousa** (Norse, moory isle). Uninhabited islet, about 1½ m. long, off the S.E. coast of Mainland, Shetland. Upon a rocky promontory facing the sound, 13 m. S. of Lerwick, stands a broch, the most perfectly preserved of the so-called Pictish towers of Scotland, and now scheduled under the Ancient Monuments Protection Acts. The unroofed court, 30 ft. across, with well and hearthstone, is surrounded by two walls 15 ft. thick overall, containing three beehive-roofed chambers, above which six galleries lit by slits in the inner wall penetrate to the parapet, 45 ft. high. The outward bulge of the upper courses, giving to the tower the aspect of a dice-box, rendered this prehistoric stronghold unscalable. It was unsuccessfully besieged by Harold, earl of Orkney, in 1154. See Broch.

**Mouscron** (Flemish, Moeseroen). Town of Belgium, in the prov. of W. Flanders. It lies close to the French frontier, 7 m. S.S.W. of Courtrai and 5 m. N.E. of Tournai rly. It has spinning mills, soap works, tobacco factories, and miscellaneous industries. Pop. 35,225.

**Mouse.** Name popularly applied to many small rodents, but cor-

rectly only to the smaller species of the genera *Mus*, *Apodemus*, and *Micromys*. Three species occur on the mainland of Great Britain, the house mouse, the harvest mouse, and the long-tailed field mouse. The first (*Mus musculus*) is found almost wherever man exists. It is brown in colour, with large ears and long tail and is altogether 4-5 ins. in length.

The harvest mouse (*Micromys minutus soricinus*), described by Gilbert White, is in the U.K. confined to England and the S. and E. of Scotland. One of the smallest of British mammals and the only one with a prehensile tail, it is bright orange brown on the upper parts and white below. It constructs a globular nest among the stems of standing corn.

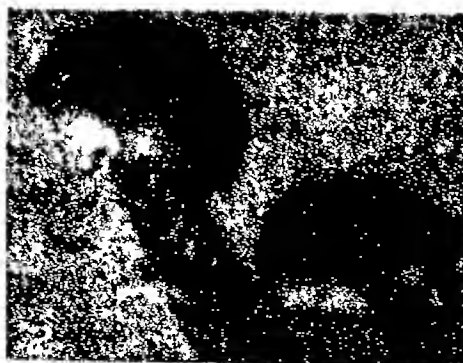
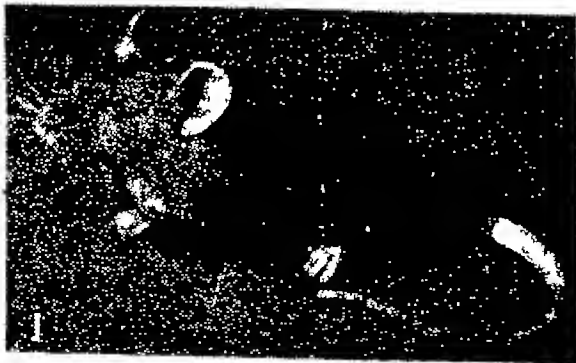
The long-tailed field mouse (*Apodemus sylvaticus sylvaticus*) swarms in the fields, and is one of the most prolific of mammals. In general form it closely resembles the house mouse, but has a longer tail. Other species and varieties occur in the Western Isles of Scotland. In America the word mouse is also applied to a large number of voles. See Field Mouse; Shrew; Vole.

**Mouse Deer.** Popular name for the chevrotain (*q.v.*), a small ungulate mammal placed by zoologists between deer and camels.

**Mousehold.** Heath or open space near Norwich, England. Within the city boundaries, it overlooks it on the N.E. Here in 1549 the insurgents under Robert Ket encamped. Cromwell immortalised it in several of his paintings, while it figures in Borrow's writings. The heath itself is public property.

**Mousehole.** Village of Cornwall, England. It is about 3 m. S. of Penzance and faces Mounts Bay. A port in the 13th century, it is now one of the most picturesque fishing villages, much visited by artists. Spaniards raiding Mousehole in 1595 burnt the church of St. Paul. The place was once known as Porth Enys (island port). Pron. Mowzle.

**Moussorgsky, Modest Petrovich** (1835-81). Russian



Mouse. 1. House m., *Mus musculus*. 2. Harvest m., *Micromys minutus*. 3. Field m., *Apodemus sylvaticus*

tending to two years, during which black garments were worn, have been greatly reduced. The mourning ring has gone, too, and

rectly only to the smaller species of the genera *Mus*, *Apodemus*, and *Micromys*. Three species occur on the mainland of Great Britain,

composer. Born at Karevo, Pskov, March 28, 1835, he entered the army, but, growing very interested in music, threw up his

commission in 1857 to devote himself to composition. Severe poverty was relieved only when he was given a minor post in the civil service, but this he also gave up in 1868, to live in St. Petersburg until his death, March 28, 1881. Moussorgsky's dominant idea was to bring music into closer relationship with everyday life. Of the group of nationalist composers, he was most influenced by literary and political movements. His chief work, the opera Boris Godounov, 1874, was first given in a revised version (by Rimsky-Korsakov) in England in 1913. A second opera, Khovantschina, was performed in 1880. Moussorgsky's songs reflect the psychology of the Russian peasant of his day. His programme music includes Pictures from an Exhibition, for piano, and a tone-poem, Night on the Bare Mountain. *Consult* Life, M. D. Calvocoressi, 1956.

**Mousterian.** Culture associated with the beginning of the Middle Palaeolithic Age and the Würm I glaciation in Europe. The type site is at Le Moustier in Dordogne. Mousterian implements, sharp-pointed hand axes and gravers, and primitive bone tools, have been found in Europe from Gibraltar to Croatia, from Derbyshire to Italy, and also in N. Africa and Palestine. The culture is associated with skeletal remains of Neanderthal man. Mousterian objects in some sites merge with those of other types, such as the Levalloisian, showing that even at that remote age there were cultural contacts between groups of human beings. Animals of the period included the musk ox, horse, cave bear, and mammoth.

**Mouth.** External orifice in the head of human beings and other animals, together with the cavity behind it. The human mouth, which contains the tongue and the teeth, is divided into two parts: the vestibule, which is the space between the teeth and the lips and cheeks; and the mouth proper, the cavity behind the teeth. This is roofed with the hard palate; it opens into the throat.

**Mouth Organ.** Small musical instrument of the reed-organ type. Fixed metal reeds are slotted into a metal plate some 4 ins. long, and enclosed within a box. Each reed has a separate channel for wind, and the channels are in parallel rows at right angles to the length of the box. It is played by being passed across the lips with an alternate blowing and suction action, the notes not required

being stopped by the tongue. It was invented in 1829, possibly by Sir C. Wheatstone, but for many years the instruments were the monopoly of a German firm who produced them in millions. The cheerful music of the mouth organ was extremely popular among troops of all countries during both Great Wars. Remarkable harmonies can be produced: indeed, exceptional performers, e.g. Larry Adler and Borrah Minnevitich, have achieved a surprising virtuosity as professional players of the harmonica, as these artists prefer it to be called.

**Mouvement Républicain Populaire** or M.R.P. (People's Republican Movement). French political party, formed in 1944 under the leadership of Georges Bidault (*q.v.*) from the R.C. democratic section of the resistance movement. It put up candidates for the first time at the first municipal elections after the liberation of France, held April, 1945, when it gained control of 447 out of 35,307 communes. In the constituent assembly elected Oct., 1945, it held 150 out of 586 seats, its closest rivals being the Communists, 159, and the Socialists, 139; in that elected June, 1946, it secured 167 seats. In the national assembly elected Nov., 1946, M.R.P. secured 172 out of 617 seats (Communists 182, Socialists 101). In the council of the republic of 1946, it had 70 out of 315 seats; in that of 1948, 18 (de Gaulle's rally of the French people having absorbed much of its former support). Members of M.R.P. served in de Gaulle's 1944 govt. and later coalition govts., including more than one premier.

**Movement.** In music, distinct part of an extended composition. e.g. symphony. *See* Sonata.

**Movement.** Biological phenomenon of widespread occurrence. It may be readily apparent as with the swimming of a fish, or less easily observable, as with a part of an organism which is free in its surroundings, such as a sperm or a chromosome. Parts of organisms may become rearranged in relation to the rest of the body though attached to them, as occurs when an animal muscle contracts or expands or a plant tendril curls. All such movements require the expenditure of energy. In the protoplasm occurs a process of respiration which is undoubtedly connected with the liberation of the required energy.

In plants movement is on the whole relatively simple. Move-

ments may be directed by conditions in the surroundings or may occur irrespective of these. The former are called taxis and may be exemplified in the phototaxis of motile algae, directed by light acting as a stimulus to them, and the chemotaxis of antherozoids, induced by the differential concentration of soluble material in the water in which they swim. Movements independent of surroundings are autonomic movements: whatever it is that institutes the movement must originate within the organism itself. Similar categories of movement by parts of plants may be recognized. Paratonic movements are induced by conditions in the environment and are either tropisms, e.g. the geotropic bending of roots into the vertical under the influence of gravity, or nastic movements, e.g. the pulvinar movements of *Mimosa pudica*, which result after shock. Both autonomic and paratonic movements may be manifestations of differential growth, as are nutations and geotropic curvatures, or may be due to reversible changes in sap pressure of cells, as in *Desmodium* and *Mimosa*. In the case of tropic movements the differential growth is the ultimate outcome of the effect of unilateral stimulation on the distribution of auxin, and a similar diffusion of substance is known to be the means of transmission of shock stimulus to the pulvini of *Mimosa*.

#### Movement in Animals

In animals movement is so diverse as to evade simple classification. It may be accomplished in lowly forms in an amoeboid manner, by means of cilia, e.g. *Paramecium* or other cell processes, e.g. *Hydra*, *Vorticella*, by the change in shape of cells or cell aggregates, as for example muscles. Striped muscles come under the direct control of the central nervous system and are concerned with the outward movements of the body, e.g. in walking, and plain muscles cause movements of the internal parts. Thus in their ultimate initiation animal movements may be autogenous or induced. In the more complicated types movements are coordinated either by nervous means or by hormones and form parts of the general behaviour of the organism. This may take the form of maintenance activity in which movement has such ends as escaping from harm, finding food or other conditions suitable to the satisfactory life of the



creature. It may be instinctive behaviour, habit, or intelligent reaction to environment.

**Mowat, ROBERT BALMAIN** (1883-1941). British historian. Born at Edinburgh, Sept. 26, 1883, he became a fellow and tutor of Corpus Christi College, Oxford, 1907, and in 1928 was appointed professor of history at Bristol university. His chief writings included *The Wars of the Roses*, 1913; *A History of Great Britain*, 1920-21; *The Concert of Europe*, 1930; *England in the 18th Century*, 1932; *The Continent of Europe in the 18th Century*, 1934. He was killed in an air crash in Sept., 1941.

**Mowbray, BARON.** An English title dating from 1283. Notable of the early members of the Norman family of Mowbray were Roger, one of the barons who rose against Henry II, and William, who was among the barons who forced Magna Carta from John. A later Roger was summoned to Parliament as a baron in 1283, and his son John was hanged for rebelling against Edward II. John, the 4th baron, married a great heiress, and their younger son, Thomas, who became the 6th baron, was made earl of Nottingham and duke of Norfolk. In 1475, with the death of John, the 4th duke, the male line of the Mowbrays became extinct. The estates were divided between the families of Howard and Berkeley, and the barony fell into abeyance. In 1877 it was revived for Alfred Joseph, 20th Baron Stourton, and his grandson William (b. 1895) became in 1936 the 25th Baron Mowbray. Bramber Castle, Sussex, was one of the seats of the Mowbrays. See Norfolk, Duke of.

**Mowing.** Operation of cutting a fodder crop, either by a mowing machine or by the scythe, the latter being also used at times for cereals. A good scytheman, swinging the implement from the body, and not employing arm work only, can mow about two acres per day. The point of the scythe is put in at the required height, and swung evenly through so as to leave a level stubble.

A mowing machine is a two-wheeled machine used for cutting grass and seed crops. The work is done by sharp "fingers" attached to a finger beam, or cutting bar, which adjusts itself to the shape of the ground. See Lawn Mower; Scythe.

**Moyale.** British frontier post on the Kenya-Abyssinian border. It owed its importance to the wells,

which lay outside the walls of the post, and its capture on July 15, 1940, was hailed as a great victory by the Italians. Across the frontier was another post of the same name, "Italian" Moyale. The position Mega-Moyale was a strong one; but the Italians evacuated Moyale after the capture of Mega by S. African forces, and it was entered without opposition, Feb. 22, 1941, by a patrol of Abyssinian irregulars sent forward by the S. Africans. See East Africa Campaign.

**Moyné, WALTER EDWARD GUINNESS, 1ST BARON** (1880-1944). British politician. Third son of the 1st earl of Iveagh, he was born in Dublin, March 29, 1880, and educated at Eton. He was M.P. for Bury St. Edmunds from 1907 to 1931. He served in the First Great War and was awarded the D.S.O. In 1922 he became financial secretary, and in 1925 minister, of Agriculture. While holding the latter office he introduced the system of the national mark for eggs in 1929. Raised to the peerage in 1932, he became secretary of state for the Colonies and leader of the house of lords in 1941, and was appointed resident minister in the Middle East in 1944. He was assassinated by Jewish fanatics in Cairo, Nov. 5 the same year, and was succeeded in the peerage by his son, Bryan Walter Guinness (b. Oct. 27, 1905).

**Moynihan, BERKELEY GEORGE ANDREW MOYNIHAN, 1ST BARON** (1865-1936). A British surgeon. Born in Malta, Oct. 2, 1865, he received his medical training at Leeds medical school and practised in Leeds, where he became professor of clinical surgery in the university. Specialising in the abdomen,

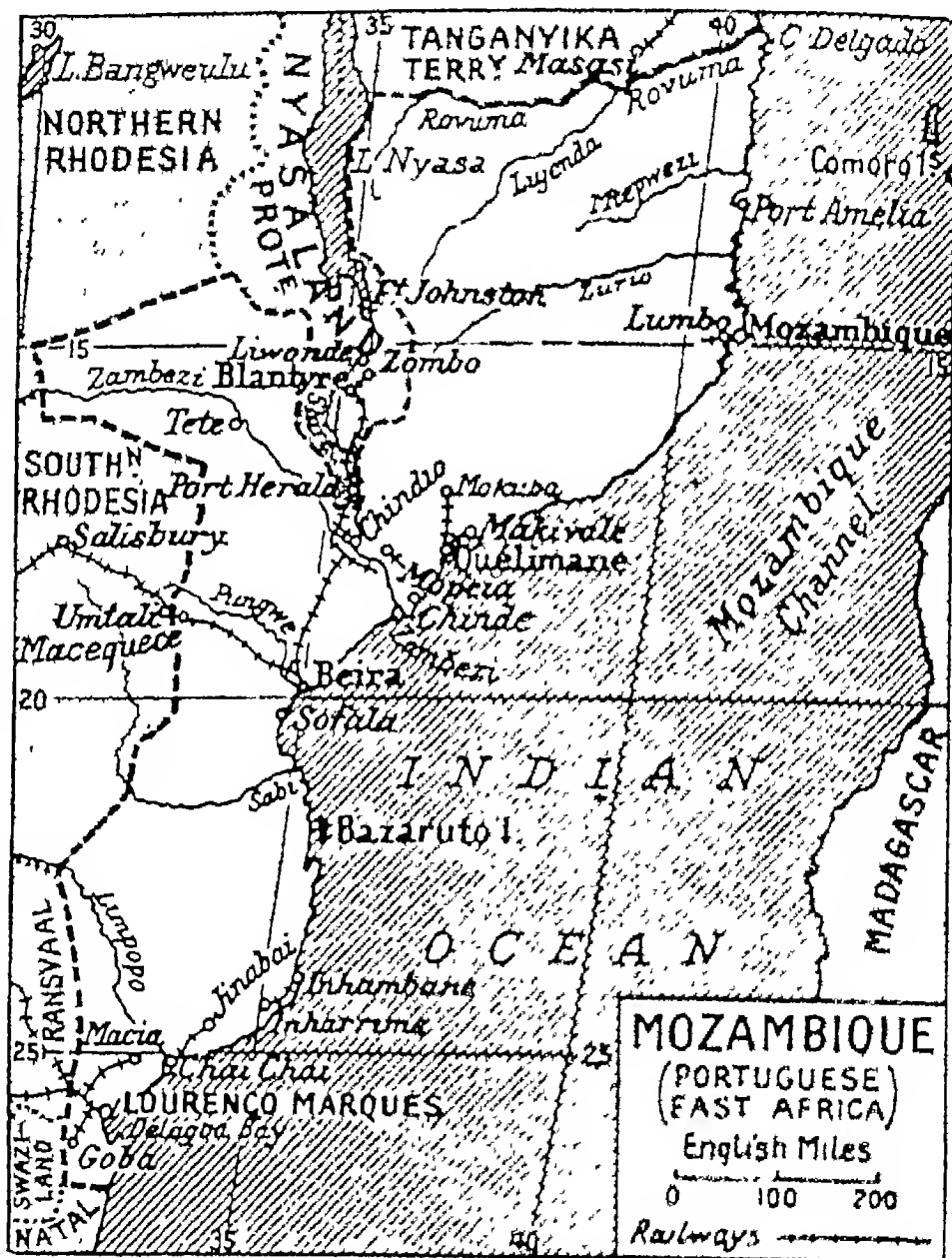


Lord Moynihan,  
British surgeon

he became one of the most eminent surgeons of his time, and was knighted in 1912. He served in France during the First Great War, rising to the rank of major-general. He was created a baronet in 1922 and a baron in 1929. Founder of the *Journal of Surgery*, he published a number of books on diseases of the digestive organs, including *Abdominal Operations*, 4th ed., 1925. He died Sept. 7, 1936, and was succeeded in the title by his son Patrick Berkeley Moynihan (b. 1906).

**Mozambique (MOZAMBIQUE),** or PORTUGUESE EAST AFRICA. Overseas prov. of Portugal, until 1951 a colony. Roughly triangular in shape, it is bounded on the N. by Tanganyika, W. by Nyasaland, Rhodesia, and the Transvaal, and E. by the Mozambique channel, which separates Madagascar from the African continent. It has an area of 297,730 sq. m., and is divided into four provinces, Sul do Save, Zambezia, Niassa, and Manica and Sofala, the last acquired by the govt. from the chartered Companhia de Moçambique in July, 1942.

From the coastal swamps the land rises gradually to forested hills and the African plateau. The whole country is extremely fertile, with a flourishing export trade in sugar, maize, cotton, copra, and sisal, as well as mineral products. The principal ports are the capital, Lourenço Marques; Beira; and



Mozambique. Map of the Portuguese prov. in E. Africa

Mozambique, the former capital. Other towns of importance are Quelimane, Mopeia, and Chinde, which lies on the only navigable outlet of the Zambezi river. The pop. of the prov. in 1950 was 5,738,911 (about 30,000 Europeans).

Lourenço Marques is connected by rly. with Pretoria, S.A., and with S. Rhodesia; Beira also is linked with the Rhodesian rly. system; and there are other lines, bringing the total mileage to some 1,400 m. The Lower Zambezi bridge, opened Jan. 14, 1935, is 12,064 ft. long, then the longest bridge in the world. The unit of currency is the Portuguese escudo.

Mozambique was visited in 1498 and 1502 by Vasco da Gama, and in 1505 by Albuquerque, who established it as a Portuguese province. In the 18th and the early part of the 19th centuries it became a stronghold of the slave trade. In 1875 and in 1885-91 disputes arose with Great Britain regarding the precise boundaries of the Portuguese territories around Delagoa Bay and Mashonaland, Matabeleland, and Manicaland, which were settled by arbitration on July 24, 1875, and by the Anglo-Portuguese convention of 1891. Certain territory S. of the Rovuma, formerly part of German E. Africa, was allotted to Portugal as the "original and rightful owner" by the Treaty of Versailles, Sept. 23, 1919.

The seaport of Mozambique (pop. 8,000) has been eclipsed in importance by Lourenço Marques. It stands on a small coral island of the same name, at the mouth of Mosuril Bay, 3 m. from the coast. It has a harbour, deep enough to admit vessels drawing 28 ft., and the fortifications built by the Portuguese in the early sixteenth century still stand. Founded in 1508, it was the capital of the colony until 1907, and is the seat of a Roman Catholic bishopric. Its full name is San Sebastian de Mozambique.

**Mozambique Channel.** Strait of Africa. It is between the coast of Portuguese East Africa and the island of Madagascar, and was at one time a noted resort of pirates and slave-raiders.

**Mozarabes.** In Spain, term applied to those Christians who, under the Moorish domination, maintained their old life and religious practices amid the Muslims, as in Toledo. The liturgy preserved by these people is known as the Mozarabic, Gothic, or Isidorian, and the introduction of the Roman rite was frequently resisted by the

Mozarabes, e.g. in Castile and Leon, 1077, and Toledo, 1085. Gradually the use was suppressed or died out, but the rite is still performed in the Mozarabic chapel in the cathedral of Toledo and at Salamanca. See Moors; Spain.

**Mozart, WOLFGANG AMADEUS** (1756-91). Austrian composer. He was born at Salzburg, Jan. 27,



*Mozart*

After J. Lange

1756. At the age of three he displayed a keen musical ear and a good memory, and under the guidance of his father quickly learned to play on the harpsichord and to compose simple minuets; at what is usually the nursery age he was taken around the countries of Europe, showing off his astonishing gifts as a player of harpsichord, organ, and violin, and as a composer—first to Paris, then to London (where he composed two symphonies and a set of sonatas for harpsichord and violin), Amsterdam, Rome, Milan, Naples, Mannheim, Vienna, Potsdam, Berlin. In 1769 the archbishop of Salzburg appointed Mozart his concertmaster, a post he filled, despite long absences while touring as a virtuoso, until 1781.

In 1777 he became friendly with the Webers of Mannheim, falling in love with the second daughter, Aloysia, a gifted singer. The affair came to nothing, and in 1782 Mozart married the third daughter and youngest of the sisters, Constanze. This same year was important as marking the beginning of a great friendship with Haydn. Although there was a difference of 24 years between their ages, each composer learned a great deal from the other.

When the boy prodigy arrived at manhood, the aristocrats who had once pampered and petted him, and showered gold pieces and snuff boxes upon him, took no further interest. Until his death, when real success was almost within his grasp, Mozart eked out a livelihood as composer, virtuoso, and teacher. Despite incessant work, lack of money, and later ill-health, Mozart's kindly nature and lively spirits were never damped, at least not in the presence of other people. Of all great composers Mozart is probably the most enigmatic, for only in some of his last compositions does his music give the slightest hint of an emotional state that might suggest mental distress. He died Dec. 5, 1791, from typhus fever, and was buried in a pauper's grave.

Mozart was a natural composer, with a seemingly unending flow of ideas and an extraordinary technical facility. A large proportion of his work was completed in his head before being put on paper. In this way he is said to have conceived the overture, *The Marriage of Figaro*.

He was an accomplished composer at the age of eight. But his early compositions were little more than stylistic copies of the works of contemporaries. Having absorbed all that his masters could teach him, he gradually developed a style of his own, as individual as that of Handel, Beethoven, or Wagner. In his short life of less than 35 years his output was prodigious. For a quarter of a century he poured out an unending stream of good works, many being masterpieces, nearly all written to order. He excelled particularly in the symphony, piano concerto, and string quartet, and in opera. Into each of these branches of composition Mozart put the whole of himself. And a study of any one branch is sufficient to give one a complete knowledge of Mozart's development from the highly polished elegancies of his youth to the profound and expressive works of his maturity, such as his last three symphonies, no. 39 in E flat, no. 40 in G minor, and no. 41 (Jupiter) in C, or the string quintet in G minor, or the piano concerto no. 24 in C minor. Throughout his life he persisted in thinking primarily in terms of the elegant aristocracy for whose delectation he expressly wrote. But although he more or less accepted the conventions of his day, particularly as regards musical form,



within those conventions he uttered the most profound, personal, and intimate things.

To whatever heights Mozart may have risen in instrumental music, he soared even higher in his operas. Despite the infinitely greater musical and dramatic resources at the disposal of later composers such as Wagner and Verdi, at least three of Mozart's operas, *The Marriage of Figaro* (1786), *The Magic Flute* (1791), and *Don Giovanni* (1787), remain as unsurpassed masterpieces for powerful characterisation and richness of melodic invention.

An exhaustive catalogue of Mozart's works was publ. 1862 by Ludwig von Köchel (1800-77), and his numbering is now customarily used to distinguish particular compositions, e.g. Linz symphony in C maj., K. 425.

#### Ralph Hill

*Bibliography.* Standard Life, O. Jahn, Eng. trans. 1882; standard guide to the music, W. A. Mozart, H. Abert, new ed. 1923-24; Mozart, D. Hussey, 1928; E. W. Blom, 1935; W. J. Turner, 1938; Alfred Einstein, 1947; Letters, ed. E. Anderson, 3 vols., 1938; Mozart's Operas, E. J. Dent, new ed. 1947; Symphonies of Mozart, G. de Saint-Foix, 1947.

**Mozhaïsk.** See Moja'isk.

**Mpongwe** or PONGO. Name applied by the Portuguese to the Abuka, a negroid tribe of Gabun, French Equatorial Africa. Their Bantu dialect extends from the N. Gabun peninsula along the coast to the Ogowe. They are industrious cultivators, traders, and boatmen, using craft 60 ft. long, hollered out by fire.

**Mpororo.** Upland region on the S.W. border of Uganda. Extending from the Kagera river-boundary between Tanganyika Territory and Ankole to Mt. Mfumbiro in Belgian Congo, it comprises scantily timbered grass-steppes 4,600 ft. above sea-level, with mountainous ridges up to 7,600 ft., and marshy valleys. It possesses a healthy, temperate climate, with big game in abundance, and fertile soil, and is ruled by the Batusi, who have subjugated the primitive negroid population.

**Mr. Midshipman Easy.** Novel by Capt. F. Marryat. It was first published in 1836, and tells the story of a midshipman whose father believes in natural equality, and who gets into many scrapes by his liberal interpretation of his father's teaching. It long enjoyed popularity as an adventure story of the sea, characterised by robust humour.

**Mtwara.** Seaport of Tanganyika, British E. Africa, on Mtwara Bay, 250 m. S.S.E. of Dar-es-Salaam. Started in connexion with the ground nut scheme (*q.v.*), it was completed and opened in 1954 as an outlet for the southern province—the first deep-water port constructed between Mombasa and Durban. It is linked by rly. with Nachungwea, 145 m. inland, and by a good coast road with Dar-es-Salaam, and has an airport.

**Muang T'ai.** Native name of Siam (*q.v.*). It means land of the free people.

**Much Ado About Nothing.** Romantic comedy by Shakespeare. While the friends of Beatrice and Benedick plot successfully to bring about their marriage, Don John, bastard brother of the prince of Arragon, plots to make Claudio, the prince's favourite, think that Hero, his betrothed, is unfaithful, but is thwarted by the unwitting agency of the simple-minded constables Dogberry and Verges.

The play, in which tragedy, comedy, and farce are blended, was first printed in quarto in 1600. The scene is laid in Messina. Much of the plot is Shakespeare's, but he derived materials from Bandello's *Timbreo di Cardona*, 1554; the story of Aridante and Geneva in Ariosto's *Orlando Furioso*; and that of Phaon and Claribel in Spenser's *Faerie Queene*. To the modern mind the main interest in the play is in the characters of Benedick, a lord of Padua, pledged to bachelorhood, and Beatrice, a lady as apt at scornful speech as disdainful of men, but full of nobility of soul, displayed in her defence of her cousin Hero. Beatrice and Benedick afford perhaps the earliest examples of character development in Shakespeare's plays, the first being a favourite impersonation with Mrs. Abington, Mrs. Siddons, and Ellen Terry; the second a favourite with Charles Kemble, Macready, Charles Kean, and Henry Irving. Notable modern revivals have been at The Lyceum, 1882, with Irving and Ellen Terry; Strand, 1924, with Nicholas Hannen and Athene Seyler; Lyric, Hammersmith, 1927, with Lewis Casson and Sybil Thorndike; and the Phoenix, 1952, with John Gielgud and Diana Wynyard.

**Much Hadham.** Parish in Herts, England. It is noted under Hadham.

**Much Wenlock.** Name for the parish in Shropshire, which forms part of the bor. of Wenlock (*q.v.*).

**Mucic Acid.** White crystalline powder. It was first prepared by Scheele in 1780 by the action of nitric acid on milk sugar. Fourcroy and Vauquelin afterwards discovered that it could be made from various gums and mucilages, and they gave it its present name. Mucic acid is isomeric with saccharic acid.

**Mucilage** (Lat. *mucus*, slime). Viscid sticky liquid secreted by many plants. Their distribution and quality vary, but the seeds of mustard, quince, and flax yield considerable quantities when macerated. The tubers of some species of Labaceae and Orchidaceae and the hairs of many contain mucilage. The chemical constitution is not thoroughly understood, but generally they contain complex compounds related to cellulose and the sugars (carbohydrates).

The term is also applied, particularly in the U.S.A., to artificial preparations used for adhesives and as suspending agents in medicine, e.g. solutions of gum arabic and of gum tragacanth. In Britain the term is usually reserved for cloudy preparations, e.g. gum tragacanth, as distinct from clear solutions, e.g. gum arabic.

**Mucin.** Substance consisting of protein combined with a carbohydrate derivative. It occurs in epithelial cells and forms the chief constituent of the cementing substance between cells. It is found also in the saliva, gastric juice, bile, etc. See Mucus.

**Muck.** Island of the Inner Hebrides, Argyll, Scotland. Situated off the coast of Inverness, it is 5 m. S.S.W. of Egg and is about 2 m. in length.

**Muckers** (Ger. *Mucker*, hypocrite). Fanatical sect of German mystics. It was founded about 1835 at Königsberg by two Lutheran pastors named Diestel and Ebel. The members, who were mostly connected with the German aristocracy, Frederick William IV being said to hold their views, professed to lead a life of "higher purity," with the result that grave charges of immorality were brought against them, and their leaders were degraded from the ministry and imprisoned, 1839-42.

**Muckrakers.** American political nickname. It was suggested by Bunyan's character, "the man with the muckrake," and was applied by Theodore Roosevelt in 1906 to a group of writers who at that time were exposing municipal and business corruption in the U.S.A. The most notable

examples were Ida M. Tarbell (History of the Standard Oil Company), Lincoln Steffens (The Shame of the Cities), Thomas W. Lamont (Frenzied Finance), and Upton Sinclair (The Jungle). The use of this term was resented by those who maintained that the writers were animated by zeal for reform. The exposures in fact resulted in many improvements in political and business practices.

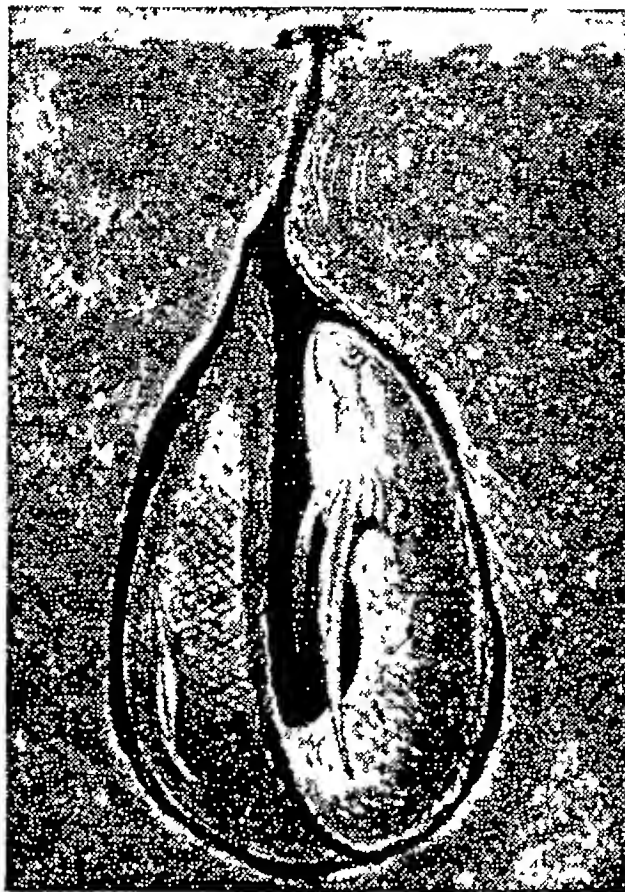
**Mucous Membrane.** Membrane composed of epithelium on a basement layer. It contains mucous glands, and lines the cavities and canals of the body which communicate with the external surface, such as the alimentary canal and bladder, the nose, and the mouth.

**Mucus.** Word of Greek origin, meaning the secretions of the mucous membranes. It is applied especially to the secretions of the nose in human beings, but also to the secretions of snails, slugs, and other molluscs.

**Mud.** In geology, name given to exceedingly finely divided rock debris. Particles are of the order of 0.005 mm. diam. or less, and require still water in which to settle. They can therefore drift far out to sea before being deposited, though flocculation of particles carried into salt water may result in their settling near shore and in estuaries. The majority of the particles belong to the clay mineral group. With loss of water on compaction mud grades to clay, and thence to shale or mudstone, and may even be altered to form slate. Deep-sea muds are found beyond the continental shelf between depths of 500 and 1,500 fathoms. They are coloured red, green, or blue.

**Mudar** (*Calotropis gigantea*). Evergreen shrub of the family Asclepiadaceae, native of India. The large, opposite leaves are broad, wedge-shaped, and woolly on the under side. The rose and purple flowers are clustered. A smaller species (*C. procera*), native of India, has white flowers, with a purple spot on each petal. Both plants yield an acrid, milky juice, used, as is the bark of the roots, as a remedy for skin diseases; and the inner bark of the younger branches provides a fibre which resembles that of hemp.

**Mud-fish OR LUNG FISH.** Popular name applied to several species of fish constituting the sub-class



Mud-fish. Pictorial diagram showing the African species in its hole

Dipnoi. The first order, Monopneumona, have one lung and consist of the single Queensland species, *Ceratodus forsteri*, described in the article Ceratodus. The Dipneumona, with a double lung, consist of the genus *Protopterus*, native of mid-Africa, and the S. American *Lepidosiren paradoxa* of the Amazon and its affluents. *Protopterus annectans* is an eel-like fish, about 6 ft. long, with slender and feeble paired fins, useless for locomotion, which devolves chiefly upon the tail. It subsists upon frogs, crustaceans, worms, and insects in the shallow water of river marshes; has a lung in addition to gills; and rises repeatedly to the surface to replenish it with fresh air.

It aestivates through the hot season when the pools dry up, by boring into the mud to a depth of 1½ ft., then coiling on itself, and secreting from the skin a coating of mucus which hardens into a cocoon. A tubular opening connected with its mouth enables it to breathe, and in this way it waits for the rainy season to release it, living in the meantime on the fat stored around its kidneys. See Bowfin; Fish.



Mudar. Leaves and flowers of this evergreen shrub

**Mud Flow.** Rapid descent of wet mud and rock down a mountainside. Such flows occur in regions where rainfall is intermittent but heavy, and where loose

fine-grained soil, clay, or decomposed rock debris is available in large quantities. Mud flows derived from glacial boulder clay have occurred in the Alps, and from deeply weathered rock material in semi-arid regions. Flows tend to follow streams. Besides mud they carry boulders which become grooved and striated during movement. Volcanic mud flows, termed *lahars* (Javanese), result from mixture of water with unconsolidated ash from the volcano. The water may be derived from crater lakes or from condensation of steam or torrential rain accompanying an eruption. Herculaneum was buried by a rain lahar in A.D. 79. See Volcano.

**Mudie,** CHARLES EDWARD (1818-90). Founder of Mudie's Library. The son of a newsagent, he was born in Chelsea, Oct. 18, 1818. In 1840 he started in business for himself as a bookseller in Southampton Row, Bloomsbury, and did also a little publishing, but a development came when he began to lend books on business lines. The idea caught on, and in 1852 he moved "Mudie's Select Library" into New Oxford Street. He died Oct. 28, 1890. The business, soon known in every part of the land, became a limited company in 1864. It moved its headquarters to Kingsway in 1931 and closed down in 1937. Mudie, who was a Congregationalist, is known as the author of hymns.



C. E. Mudie, Library founder

**Mudros.** Town and bay on the S. coast of the Greek island of Lemnos, in the Aegean Sea. During the First Great War its port became the chief naval base for the Dardanelles operations, and in addition was used as a military base for the campaign in Gallipoli. The armistice between the Allies and Turkey was signed here, Oct. 30, 1918. See Aegean Sea; Gallipoli, Campaign in; Lemnos.

**Mud Volcano.** Small volcano, the cone of which consists chiefly of solidified mud. These volcanoes discharge mud and gases, chiefly hydrocarbons, and may reach a height of 300 ft. They may occur in non-volcanic areas, e.g. near Baku, on the Caspian Sea.

**Muezzin** (Arab. *mu'adhdhin*, one who calls to prayer). Official in a mosque who proclaims the





Muezzin calling the faithful to prayer, from the painting by V. L. Gerôme  
By courtesy of Goupil & Co.

times of prayer. In the Mahomedan day there are five times for prayer: dawn, noon, 4 p.m., sunset, and midnight. The call, which is sounded from the minaret, consists of the following sentences: Allah is great (thrice); There is no God but Allah (twice); Mahomet is the Prophet of God (twice); Come to prayer (twice); There is no God but Allah (twice). Appointed by the imam (*q.v.*) of the mosque, the muezzin is an official of some importance, and in virtue of his office is entitled to a place in Paradise. See Mahomedanism; Mosque.

**Muff** (Old Fr. *moufle*, thick glove). Article of dress, open at either end, and made of fur, velvet, silk, etc., padded with cotton wool, and carried to keep the hands warm. In the 17th and 18th centuries muffs were used by men as well as women. Snuffkin or snoskyn is an old word for a muff.

**Muffle**. In metallurgy, a container used for smelting a sample of metal or ore, or for heating a metal article out of contact either with the heating fuel or with the products of combustion. Usually roughly box-like in form, and made of fireclay or other refractory material, closed except for a small opening at one end, it is placed in a furnace so that hot gases pass round it and heat it to the necessary degree. Muffles are also used in assaying and in tempering or hardening of metals.

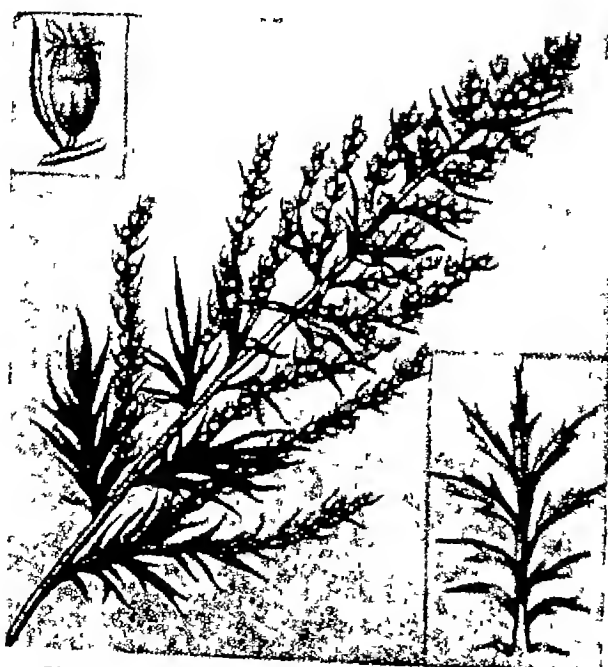
**Mufimbiro** OR MFIMBIRO. Range of active volcanic mountains of Africa. They are N. of Lake Kivu, partly in Congolese territory and partly in Uganda, and attain an alt. of nearly 15,000

ft. They were first seen by Captain Speke in 1861. The range consists of eight prominent peaks, of which Karisembi, 14,780 ft. in alt., is the highest. Other principal peaks are Muhavura, Mikenno, Visoke, Sabinio, Namlagira, and Nina Gongo.

**Mufti**. Mahomedan consulting canon lawyer. Upon application he gives legal opinions on points of Islamic law. The use of the word for plain or civilian clothes instead of uniform was originally Anglo-Indian. The loose, flowing robes of a mufti compared with a tight-fitting uniform may have suggested it. See Grand Mufti.

**Muggletonians**. English religious sect. It was named after Lodowicke Muggleton (1609-98), who declared that he stood in the same relation to his cousin, the Puritan, William Reeve, that Aaron stood to Moses, and the two, professing the gift of prophecy and declaring that they were the two witnesses foretold in Rev. 11, attracted a large following. They taught that God has a human body; denied the existence of the Trinity; held that the Devil was incarnate in Eve, and that God the Father suffered on the Cross, leaving Elijah to govern Heaven while He came to earth to die. Consult Reeve and Muggleton's Transcendent Spiritual Treatise, 1652; Acts of the Witnesses, with Letters and Autobiography, L. Muggleton, 1699; Complete Collection of the Works of Reeve and Muggleton, 1756, reprinted 1832.

**Mugwort** (*Artemisia vulgaris*). Perennial herb of the family Compositae, native of Europe, Asia, and N. Africa. It has erect, reddish, grooved, and branching stems. The alternate broad leaves are deeply cut into long-pointed segments, and the lower surface is white and silky. The small reddish-yellow flower-buds form slender sprays. See Wormwood.



Mugwort. Spray of foliage and flowers. Inset, left, single flower: right, segmented leaf

**Mugwump**. American political nickname. At the 1884 presidential election many influential Republicans objected so strongly to the party's choice of J. G. Blaine as its candidate that they either abstained from voting or supported Grover Cleveland, the Democratic candidate. They formed no party organization of their own. Their critics accused them of regarding themselves as superior to other Republicans in character and intelligence, and dubbed them "mugwumps," an Algonquin word denoting "chiefs" or "big men." The name is sometimes applied nowadays to voters independent of any party.

**Mühlberg**. A town of E. Germany, in Saxony-Anhalt, on the Elbe, 35 m. N.N.W. of Dresden. Its main church dated from the 13th century; others, and a castle, from the 15th and 16th. There is a trade in timber and agricultural produce, while beet sugar is manufactured. After being long part of Saxony, the town was given to Prussia in 1815. Pop. (1950) 5,000.

Mühlberg is famous for the battle fought here between the emperor Charles V and John Frederick, elector of Saxony, one of the leaders of Protestantism, April 24, 1547. With the assistance of Maurice of Saxony, Charles suddenly invaded Saxony, which its ruler, John Frederick, hastened from S. Germany, where he commanded the army of the Protestant league, to defend. The armies met at Mühlberg, where the emperor's troops, aided by the genius of Maurice, were victorious. John Frederick, taken prisoner, surrendered his electorate to Maurice.

In the Second Great War it was captured by the U.S. 1st army, April 5, 1945. After the German surrender it lay in the Russian zone of occupation.

**Mühlhausen**. Town of E. Germany, in Thuringia, on the Unstrut, 25 m. N.W. of Gotha, with which it is connected by rly. Of many old buildings, the chief are the 16th century town hall and the churches of S. Mary and S. Blasius, both 14th century edifices, though later reconstructed. Around the old town are modern suburbs. There are manufactures of textiles, machinery, chemicals, tobacco, and leather. After being in Thuringia, it was made a free city, but this privilege was taken away in 1802, and in 1815 it became part of Prussia. Armoured columns of the U.S. 3rd army captured Mühlhausen on April 5, 1945, meeting with only light German resistance.

The town lay after the German surrender within the Russian zone of occupation. Pop. 39,367.

**Muhu** or Mõõn. Island of the Baltic, off the coast of Estonia, of which it forms part. It is 14 m. broad and 14 m. long, and lies between the mainland and the islands Dago and Ösel, granted by Estonia to Russia as military bases in Sept., 1939. Occupied by the Germans in 1940, Muhu was recaptured by the Russians, Sept. 30, 1944.

**Muilrea.** Mt. in the S.W. of co. Mayo, Eire. It stands on the N. side of Killary Bay. Alt. 2,688 ft.

**Muir, JOHN RAMSAY BRICE** (1872-1941). British historian and politician, known as Ramsay Muir.



Ramsay Muir,  
British historian

He became lecturer, 1900, and professor, 1906, of modern history at Liverpool, and in 1913 occupied the chair of history at Manchester, resigning in 1921. Entering politics, he was elected Liberal M.P. for Rochdale, 1923-24, and for many years fought in the Liberal cause, acting as chairman, 1931-33, and president, 1933-36, of the National Liberal Federation. His works included *Atlas of Modern History*, 1911; *The Expansion of Europe*, 1917; *The Interdependent World and its Problems*, 1933. He died May 4, 1941.

**Muir Glacier.** Alaskan glacier fed by the heavy snowfall common to the N.W. of N. America. It discharges into Glacier Bay, a fjord to the W. of Juneau. Nine ice streams flow from an amphitheatre on Mt. Fairweather, 35 m. across, to form the main stream, which is from 6 to 10 m. wide and terminates in an ice cliff at the head of the bay. The cliff was much broken in 1899 by an earthquake; it advances about 7 ft. daily during its period of greatest movement, but has receded over 25 m. since 1794. The base of the cliff is 900 ft. thick and 760 ft. below sea level. Giant bergs break away and float seawards.

**Muirkirk.** Town and parish of Ayrshire, Scotland, on the river Ayr, 26 m. from Ayr. It has coal and ironstone mines and ironworks. Pop. (1951) parish, 3,722.

**Mukden.** City of N.E. China. The capital of Liaoning prov., Mukden is the cradle of the Manchu dynasty, which reigned over China for 268 years. It is the centre of heavy industry for the N. In the



Mukden. Scene in one of the principal thoroughfares of this city of N.E. China

vicinity are the tombs of the Imperial family. The circuit of the town walls is 10 m., with an inner wall of 3 m. containing the palace and government buildings. The town was opened to foreign trade by agreement with the U.S.A. in 1903. It is served by the Peking-Mukden rly., and by the South Manchuria rly. In 1931 Japanese troops occupied the former Chinese province of Manchuria, and in Feb., 1932, a new state called by the Japanese Manchukuo had Mukden as its largest city.

Russian forces occupied Mukden Aug. 19-20, 1945, Chinese govt. troops entering the city on Dec. 13. The Russians left on March 12, 1946, taking with them industrial equipment which they claimed as former enemy property, and therefore as reparations. Mukden was entered by Chinese Communist forces, Oct. 31, 1948. Pop. (1956 est.) 2,290,000.

**Mukden, BATTLE OF.** Fought between the Russians and the Japanese, Feb. 20 - March 10, 1905. In Oct., 1904, the Russians had attacked Japanese positions on the Sha-Ho, and the rival forces were still occupying much the same lines. Both had strengthened their defences, the Russians holding a front about 60 m. long. Their general Kuropatkin had about 300,000 men; the Japanese under Oyama were almost equal.

Strengthened by the army that had just captured Port Arthur, Oyama proceeded to execute his plan for breaking the Russian front. On Feb. 20 a new Japanese army, the 5th, working through the mountains towards the Russian left, came into contact with the foe, and after severe fighting two passes were stormed. On Feb. 27 Oyama's centre opened an attack on the opposing Russians, but more important was the appearance, quite unexpected by the Russians, of the 4th army, the

men of Port Arthur, upon their right flank. Kuropatkin, misled as to his foe's intentions, drew in his right wing, while the Japanese were curving round the two ends of his army. Japanese losses were terribly high, but the danger to Russian communications made a retreat inevitable. This took the form of a series of rearguard actions and after a time the Russians became demoralised. Mukden was evacuated by March 10, and battle and pursuit were soon over. The Russians lost 26,500 killed and 40,000 prisoners; the Japanese had 41,000 killed and wounded. See Russo-Japanese War.

**Mula.** Town of Spain, in the prov. of Murcia. It stands on the river Mula, a small tributary of the Segura, 20 m. W.N.W. of Murcia. There is trade in wine, olive oil, and farm produce. Near by are the Baños de Mula, with hot sulphursprings. Pop. (1950) 15,127.

**Mulatto** (Sp. *mulato*, young mule). Half-breed, especially the offspring—and their descendants—of parents whereof one is of white, the other of a negro race. The hair is usually negroid, the colour intermediate. The offspring of a mulatto and a white is a quadroon (one-fourth black); of a quadroon and a white an octoroon (one-eighth black). See Negro.

**Mulberry** (*Morus*). Name given to trees and shrubs of the family Moraceae, natives of the N. temperate regions. There are ten species, of which the best known are the black mulberry (*M. nigra*), the white (*M. alba*), and the red (*M. rubra*). All have heart-shaped leaves with toothed edges, and inconspicuous greenish-white unisexual flowers, produced in spikes and wind-fertilised. The compound fruit is somewhat similar in form to that of the raspberry, but has a very different origin, the latter being the product of a single flower, whilst each mulberry is due



to the coalescence of all the fruits from a spike of female flowers. The black or common mulberry, a native of the Orient, was introduced to England in 1548, the first trees being planted at Syon House, Isleworth. James I fostered the planting of mulberry gardens around London, in the belief that the silk industry might be established there.

The tree succeeds in any deep, rather damp soil, but the two others named prefer a dry soil. The white mulberry, a native of China, was introduced to Great Britain in 1596, for the sake of its leaves, which are better for silkworm culture. Red mulberry, with long, purple, pleasant-flavoured fruit, is a N. American tree of larger proportions (40-70 ft. high). Mulberries may be raised from seed, but more expeditiously by large cuttings, or layering in autumn.

**Mulberry.** Code name for the operation by which the prefabricated harbours used off the Normandy beaches to support the Allied invaders of Europe in 1944 were constructed. The Allied assault on the Continent was a gigantic undertaking which, it was estimated, would require the landing of 12,000 tons of stores and 2,500 vehicles daily for a period of 90 days. The enemy was known to have fortified the ports on the French coast with great strength, and the virtual impossibility of capturing one by direct assault from the sea was demonstrated by the attack on Dieppe in Aug., 1942 (*see* Dieppe: Dieppe Raid, 1942). It was therefore decided that the invasion would have to be made over open beaches, and already in 1942 Winston Churchill had given orders: "Piers for use on flat beaches. They must float up and down with the tide."

Early in 1943 prototypes of a pier and a pierhead were constructed and tested, and the construction of two artificial harbours was part of the invasion plan submitted to, and approved by, the combined chiefs of staff at Quebec in Aug., 1943. Despite the problems of man-power—20,000 workers were needed to construct the caissons (*v.i.*) alone—and material resources, it was decided that the harbour units should be constructed in Great Britain; the greater facilities existing in America being outweighed by risks of the long tow across the Atlantic.

Each of the two artificial harbours, Mulberry A for the American sector, Mulberry B for the British, was designed to enclose a

water area roughly equivalent to that of Dover harbour, and consisted of an inner fixed breakwater made of concrete caissons (code name Phoenix). Floating piers built on the pontoon principle ran out from the beaches to spud pierheads against which ships could tie up sheltered by the caisson breakwater. For technical reasons, the caissons could not be laid in water deeper than  $5\frac{1}{2}$  fathoms, which would limit the use of the harbours to moderate sized ships of the coaster type; a second, or outer, breakwater of floating bombardons was therefore designed. Eventually, owing to the time required for construction and the number of tugs for towing, the plan for the bombardon breakwater was curtailed, and a preliminary breakwater of blockships (code name Gooseberry) was decided on. Some 60 naval and merchant ships, including the old target ship Centurion, the French battleship Courbet, and the Dutch cruiser Sumatra, were used to make five sections with a total length of 24,000 ft. off the invasion beaches.

#### Building the Caissons

The concrete box-shaped caissons, of which 212 were built, were of six sizes, the largest displacing 6,044 tons, the smallest 1,672 tons.

These caissons were built in graving docks at Southampton, Goole, Middlesbrough, Tilbury, and the East India dock, London, in an entrance lock at Plymouth, on slipways at Langston, Portsmouth, and Southampton, and in shallow basins excavated in open land alongside the Thames; 600,000 tons of concrete, 31,000 tons of steel girders, 1,500,000 yds. of steel shuttering, 45,000,000 ft. of timber, and 100 m. of wire cable went into them; 147 were completed before D-day (June 6, 1944), the remaining 65, used as additional breakwaters and as replacements, by early Aug. Each caisson had quarters for a crew, and for artillery detachments to man during transit the defensive armament of Bofors guns.

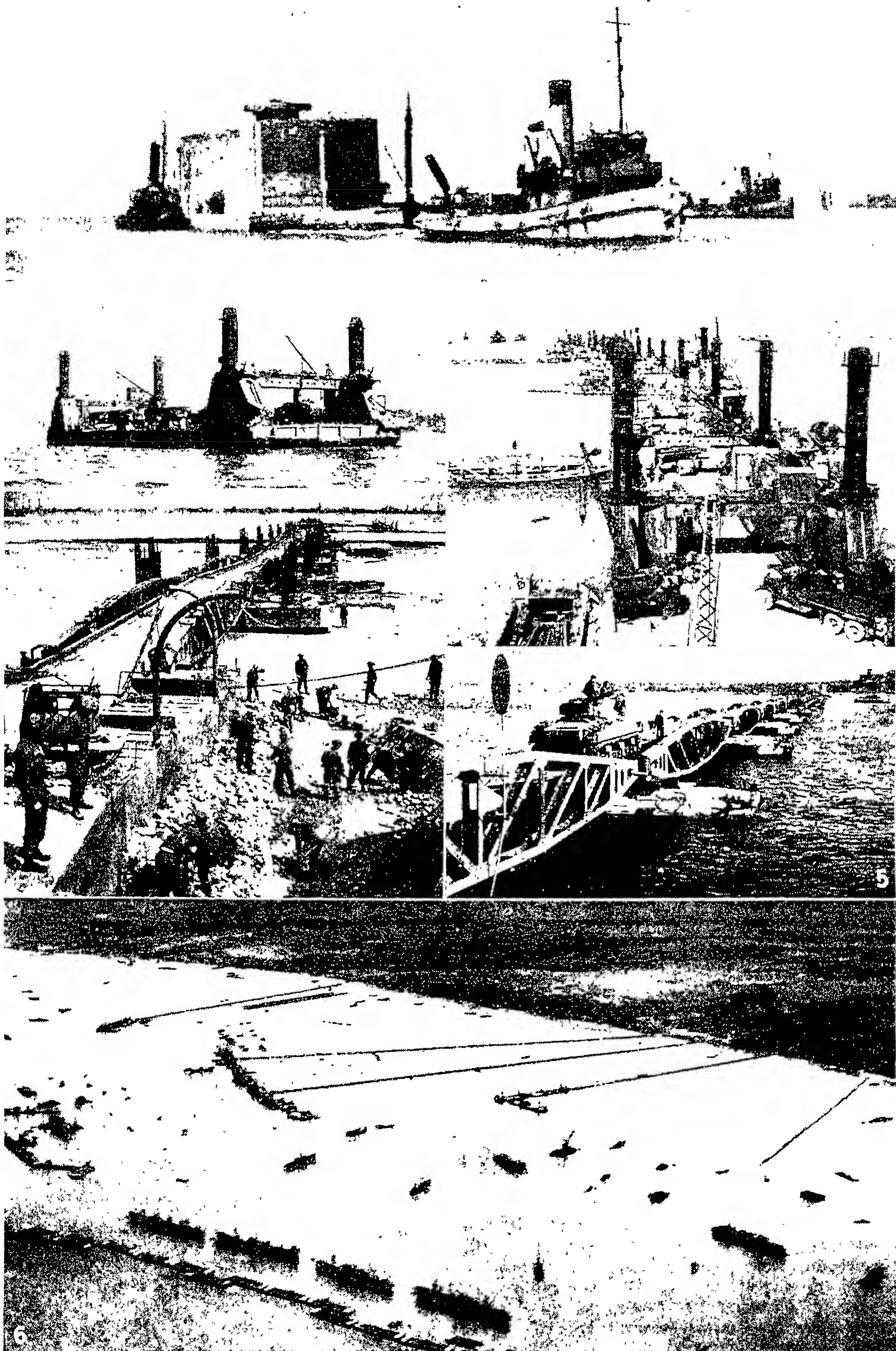
The piers were designed to remain stable at the shore end on a shelving beach with a rise and fall of the tide exceeding 20 ft. Each pier was made up in 80 ft. spans, was supported on pontoons called Beetles, had a road width of 10 ft., and weighed 30 tons. The piers were towed across the Channel in 500 ft. lengths; that is, six spans and the shore-ramp float. Seven miles of piers were built for the two harbours.

Most of the pierheads, or spuds, were built in Scottish ports, a prototype having been tested in the Solway Firth in April, 1943. Each pierhead weighed over 1,000 tons, was 200 ft. long, had a beam of 60 ft., and consisted of a steel pontoon riding within four steel legs or spuds, which were power-operated and driven into the seabed. The pierheads slid up or down the legs according to the tide, so that they maintained a fairly constant level. Each pierhead contained generating sets, storage space, and accommodation for the personnel serving it.

The piers carrying the roadways were flexibly attached to the pierheads so that in beam winds they could slew right or left a distance of 40° without interrupting the flow of traffic passing over them at a speed of 25 m.p.h. The roadway itself also had considerable flexibility, as it was composed of separate panels loosely bolted to the cross members.

The blockships crossed the Channel safely behind the assault forces and were then sunk by explosive charges during the five days following June 6. Meanwhile the caissons, breakwaters, and piers, about 1,000,000 tons in all, were being towed over 100 m. at an average speed of 4 knots—some 210 tows for which 85 tugs were used. The concrete caissons were accurately sunk in places selected off Arromanches for Mulberry B, off St. Laurent for Mulberry A, by a special surveying party which landed on D-day. Royal Engineers ("Seabees" in the U.S. harbour), with a naval beach commando and a detachment of Royal Marines, also landed on D-day, cleared mines, cut ramps in the esplanades, and prepared roadways down to the beaches ready to receive the shore ends of the piers. By June 18 more than half the caissons were in position, one pier hundreds of yards long and several pierheads were completed, and coasters could unload at any state of the tide.

The operations had gone according to plan with very few sea accidents, and, owing to Allied air superiority, little enemy interference; but on June 19 there blew up from the N.E. the worst June gale for 40 years. It continued for three days, the half-constructed harbours being exposed to its full force. Mulberry A, in the angle between the coast of Calvados and the Cotentin pen., suffered severely, the piers being twisted beyond repair. The Americans



Mulberry B, shown here, was assembled off Arromanches, Normandy, following the first landings of the Allies there, June 6, 1944. 1. Concrete caisson under tow for crossing the channel. 2. Spud pierhead

arriving off Arromanches. 3. Wharf formed from pierheads in line. 4. Inshore end of pier completed. 5. Pier giving exit to Arromanches. 6. General view of Mulberry B when completed and in use

# **MULBERRY: BRITISH PREFABRICATED PORT WHICH MADE HISTORY IN 1944**

*British Official*



captured Cherbourg June 30, and therefore abandoned Mulberry A. Mulberry B, partially protected by the Calvados reef, suffered less.

The experimental floating breakwater of bombards broke up; but whereas unloading directly on the beaches was impossible during the storm, 800 tons of petrol and ammunition as well as many troops were landed at the piers

at Arromanches even on the worst day. All pier equipment on passage when the gale began was sunk, but only one caisson was lost on the journey. After the gale, a long spell of rough weather prevented pier equipment from being towed across the Channel, so that the harbour was not of maximum value until well into July. In the first 100 days after June 6, 2,200,000 men were landed with 4,000,000 tons of stores and 500,000 vehicles.

Spare Mulberry caissons were towed from England to Walcheren island in 1945, where they were used to stop the gaps blown in the dykes by the R.A.F. in Oct., 1944, before the Allied seaborne assault on the island.

The British harbour on the Normandy coast is to be preserved as a war memorial to the British by the French government. *Consult* Operation Neptune, K. Edwards, 1946.

**Mulcaster**, RICHARD (c. 1530-1611). English schoolmaster. A native of Cumberland, he was educated at Eton under Udall; at King's, Cambridge; and at Christ Church, Oxford. He was the first headmaster of Merchant Taylors' school, 1561-86; vicar of Cranbrook, Kent, 1590; high master of St. Paul's school, 1596-1608; and became in 1598 rector of Stanford Rivers, Essex, where he died April 15, 1611, and is buried. He wrote educational works, including *Positions*, 1581, and believed in good education for girls and thorough training of teachers.

**Mulch**. Dressing of moist stable manure, leaf mould, straw, bracken, or other manurial substance applied to soil round transplanted trees or shrubs. Its object is to afford protection from frost, conserve moisture, and supply nutriment which rain will carry down to the roots of the plants.

**Mule**. Name strictly applying to a hybrid between a male ass and a mare. All the various members of the horse family, including asses, zebras, and quaggas, will interbreed, and the term mule is applied to all the resulting offspring.



Mule. Specimen bred from a Catalonian jack-ass and an English mare  
W. S. Berridge, F.Z.S.

Almost all these hybrids are sterile, but a few cases of fertility have been recorded. The rule among these hybrids is that the offspring resembles the father

in appearance and the mother in size. Hence mules are large animals of ass-like character.

In order to secure size, mules are usually bred from the Poitou and Spanish jack-asses, which are of exceptional height and are kept almost exclusively for this purpose. A good mule may stand 16 hands high at the withers and be almost equal in strength to a horse of the same size. The long ears, small hoofs, and tendency to a tufted tail always distinguish the mule from the horse.

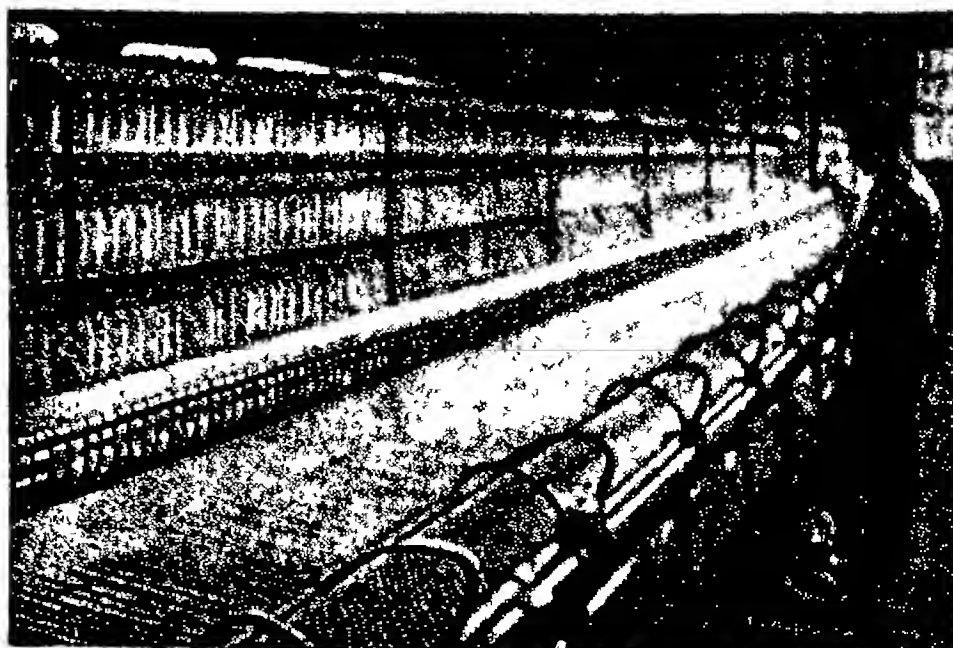
Mules are exceedingly useful for draught and pack work, especially in mountainous and difficult country, being much hardier than the horse, less liable to disease, less particular in the matter of food, of greater endurance, longer lived, and very sure footed. A mule is fit for work when four years old, is at its prime from eight to 12, and will continue to work well till 14 or 15. In spite of its proverbial character, the mule is not as a rule obstinate when well treated, but is particularly docile.

**Mule**. Machine used for spinning. It was invented by Samuel Crompton and improved by Richard Roberts, both connected with the textile industry in Lancashire. The mule is an intermittent machine for converting rovings into yarn, and it performs a complex cycle of movements. The rovings are drawn from large bobbins carried upon the upright creel at the back of the machine, and they pass through pairs of

geared rollers which draft or elongate the lightly twisted roving. The material is carried forward to an inclined spindle mounted upon the movable carriage of the mule. The spindle is driven by a band from the cylinder known as the tin roller. First the carriage carrying the spindles travels forward, thus stretching the roving, and during this period the spindle is turning at high speed without winding up the yarn. Stretching and twisting going on simultaneously, the weak places in the roving are continually being reinforced, as the twist lends strength to the weak portions. The carriage backs slightly, and the speed of the spindles is reduced. The carriage begins to run in, and the yarn stretched and twisted on the outward journey is wound upon the spindles during the inward run, the position of the yarn being controlled by the movement of faller and counter-faller wires.

This machine belongs pre-eminently to the Lancashire cotton industry, and it gives a full and spongy yarn. Mules of a slightly modified type are used for woollens and, especially upon the Continent, for worsteds. More floor space is occupied by mules than by the continuous spinning frames, and more skill is required in their manipulation, but with suitably adjusted mule machinery yarns of every variety from the coarsest to the ultra-fine are produced to perfection. The mule is capable of great delicacy of operation, and the details of its construction have been the subject of immense study. *See* Cotton; Spinning.

**Mulgrave Castle**. Seat of the marquess of Normanby at Sandsend, W. of Whitby, in the N. Riding of Yorkshire, England. In the grounds are the remains of the 11th century stronghold of a Saxon duke named Wada. About 1625 the property passed to Edmund,



Mule used in cotton spinning. The machine illustrated has 1,300 spindles, spinning and winding 4,000 miles of thread in a day

Lord Sheffield of Butterwick, created earl of Mulgrave, a title revived in 1812 in favour of Sir Henry Phipps, an ancestor of the marquess of Normanby.

**Mulhacen** OR MÜLAHACEN, CERRO DE. Mountain of Spain, in the prov. of Granada. The culminating point of the Sierra Nevada, it is the loftiest peak in Spain, reaching an alt. of 11,420 ft. The snow line occurs at approximately 10,000 ft.

**Mülheim.** Name of two towns in Germany. Both are river ports, one being on the Rhine and the other on the Ruhr.

Mülheim-on-Rhine lies on the right bank of the river 2 m. below Cologne, with which it was incorporated in 1914. It has a ship-building yard and a commodious river harbour; its industries include tanning, brewing, and the manufacture of velvet and silk. It became a corporate town in 1322 and much of its later prosperity was due to the Protestants who settled there from Cologne, which in the Second Great War fell to troops of the U.S. 1st army, March 6, 1945, and was included after the German surrender in the British zone of occupation. Pop. (est.) 70,000.

Mülheim-on-the-Ruhr lies on the river Ruhr 7 m. W. of Essen. Its chief industry is iron-working; it also manufactures leather, tobacco, paper, and beer, and is a rly. centre. It received municipal rights in 1508. Its twelfth-century church was severely damaged in the Second Great War. Captured by units of the U.S. 9th army, April 9, 1945, it was subsequently in the British occupied zone. Pop. (1955 est.) 168,280.

**Mulhouse** (Ger. Mülhausen). Town of Haut-Rhin, France. It stands on the Ill. 56 m. S. by W. of Strasbourg, and on the Rhine-Rhône canal. It has been a centre of cotton manufacture since the mid-18th century; other industries include engineering, dyeing, and paper manufacture. The town possesses the remnants of the bishop of Strasbourg's castle, a town hall built in 1431 and renovated in 1552, and S. Stephen's church (14th century). Made a free city in 1261, it was for long linked with Swit-

zerland, but afterwards became German. In 1797 it was united with France, and in 1871 became a part of Germany. The scene of heavy fighting in the First Great War, it was restored to France in 1919. Occupied by German forces shortly before the Franco-German armistice of 1940, Mulhouse was liberated by the French 1st army on Nov. 22, 1944. Pop. (1954) 99,079.

**Mulkear.** River of Ireland. It rises in two head-streams—one in the W. of co. Tipperary and the other almost wholly in co. Limerick—and flows N.W. for 32 m. to the Shannon, which it enters 4 m. above Limerick city.

**Mull.** Name for a headland or long promontory, derived from the Gaelic. Examples of its use in western Scotland are the mull of Kintyre, and the mull of Galloway.

**Mull.** Island of Inner Hebrides, Argyllshire, Scotland. It is 7 m. W. of Oban and separated from the mainland by the firth of Lorne and the Sound of Mull. The third largest of the Western Islands, it has a mountainous surface (Ben More, 3,169 ft.) and a rugged and deeply indented coast, fringed on the W. with a number of smaller islands. It is almost entirely underlain by lavas and rocks related to the volcanic activity of Tertiary times. Grazing is the principal industry. There are a number of picturesque glens and fresh water lochs. Tobermory, in the N., is the chief town. Length 30 m., breadth 29 m.

**Mull.** Sound or channel between the island of Mull and Morven peninsula, Argyllshire, Scotland. There is beautiful scenery along its shores. It is 20 m. long and from 1½ to 3 miles wide.

**Mullah** OR MOLLAH. Mahomedan term for a teacher or scholar, particularly one learned in civil and ecclesiastical law. It is also applied to a mosque officer, and in India is the usual term for a

Mahomedan schoolmaster. The influence and fanaticism of the so-called "mad Mullahs" have caused serious disturbances in India and Somaliland. The raids by the leader of the rebel dervishes in the latter country provoked punitive expeditions by the British, 1901-05. See Somaliland.

**Mullein** OR AARON'S ROD (*Verbascum thapsus*). Biennial herb of the family Scrophulariaceae, native of Europe and N. and W. Asia. The first year it forms a cluster of large, oval, lance-shaped, very woolly leaves from 1 ft. to 18 ins. long. The second year a stout, woolly, leafy stem 3 ft. high is sent up, ending in a long spike of yellow flowers. Wool from leaves and stem was formerly woven into wicks for lamps.

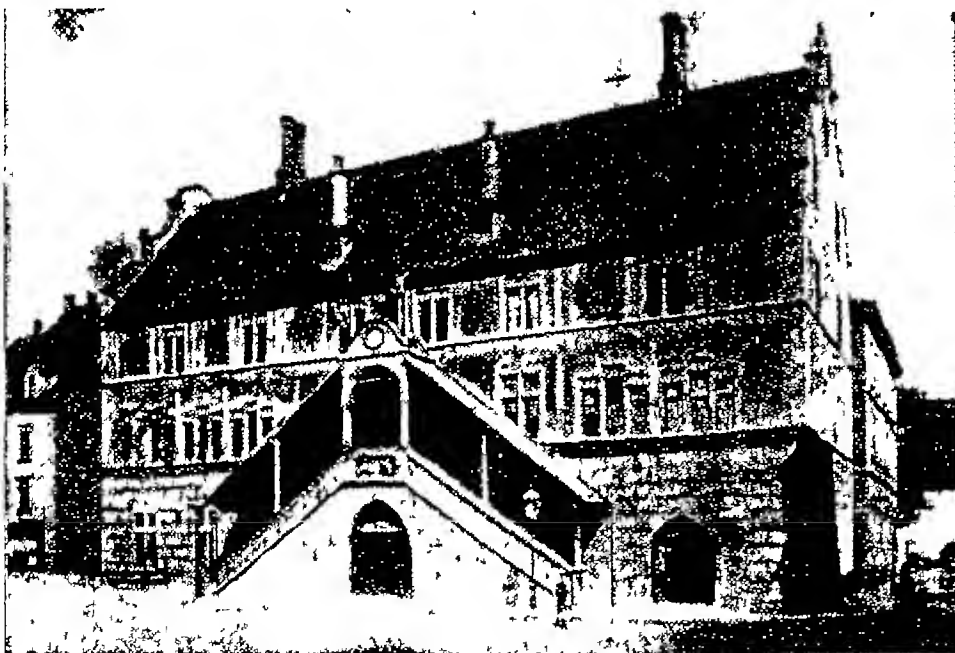
**Muller, FRIEDRICH MAX.** See Max Muller.

**Müller, GEORGE** (1805-98). German-born British philanthropist. Born near Halberstadt, Sept. 27, 1805, he was educated in Germany. In 1829 he came to England with a view to becoming a missionary to the Jews, but in 1830 undertook a pastorate at Teignmouth, Devon, becoming a naturalised British subject. He practised theretheidealshe followed throughout his life, trusting to prayer to supply material wants. In Bristol he started an orphanage. Soon he had over 2,000 children under his care, and later erected five large buildings to house them at Ashley-down. His book, *The Lord's Dealings with George Müller*, greatly helped him to obtain funds. He died at Bristol, March 10, 1898.

**Muller, HERMANN JOSEPH** (b. 1890). American geneticist. He was born on Dec. 21, 1890, in New York City, and educated at Columbia university. While professor of zoology at Texas university, 1920-25, he began his research in the problems of heredity. He was senior geneticist at the Institute of Genetics, Moscow, 1933-36, and lecturer at the Institute of Animal Genetics, Edinburgh, 1937-40. In 1946 he received a grant from the American cancer society, and in the same year was awarded the Nobel prize in medicine and physiology. His work on heredity changes caused by X-rays striking the genes and chromosomes of living cells



George Müller,  
British philanthropist



Mulhouse, France. The medieval town hall, showing the covered entrance steps



assumed added significance after the dropping of atomic bombs on Hiroshima and Nagasaki.

**Müller, JOHANNES** (1801-58). German physiologist. Born at Coblenz, July 14, 1801, he was edu-



Johannes Müller,  
German physiologist

cated at Bonn, where he studied physiology. In 1826 he was made professor of physiology there, and in 1833 occupied a chair at Berlin. His important contributions to our knowledge of the complex mechanism of the human body have caused him to be regarded as the founder of modern physiology. He died April 28, 1858. His chief work was *Handbook of Human Physiology*, Eng. trans. 1840-49.

**Müller, PAUL** (b. 1899). Swiss chemist. Born at Basel, Jan. 12, 1899, he studied at the university there, and in 1925 joined the staff of a local dyestuff company, carrying out research work in the laboratories. Owing to his interest in botany, he became concerned with the protection of plants against insects, and as a result of experiments ranging over a period of some 10 years he discovered the insect-killing properties of D.D.T. He was awarded the Nobel prize for medicine, 1948.

**Mullerian Duct.** A term in embryology. In the embryo of any vertebrate the coelom communicates with the exterior by a duct which will subsequently be concerned with the removal of genital products, i.e. eggs or sperms. In the embryo destined to develop into a female, a shelf along the wall of the coelom curls up to form a tube, which is the Mullerian duct. It forms the oviduct, and is quite distinct in origin from the duct which removes the sperms in the male. Its development is encouraged by the secretion of oestrogens (*q.v.*). Vestiges of the Mullerian system persist in the male in the prostate gland (*q.v.*).

**Müller's Larva.** Free-swimming larval form of the group of Platyhelminth worms known as Polyclads. It is oval in shape, with a series of elongated processes fringed with long cilia. It is sufficiently similar to the free swimming larval stage (trochophore) of Annelid worms to indicate that there is close phylogenetic relationship.

**Mullet.** Name applied generally to the numerous species comprised in two unrelated genera of



Mullet. Specimen of red mullet,  
*Mullus barbatus*

marine food fishes. Red mullets (*Mullus*), of which there are about 40 species, are represented in Great Britain by the common red mullet of the markets. It has a fine flavour, and its beautiful colour adds to its attractiveness. Grey mullets (*Mugilidae*) include about 70 species, of which three occur in the British seas. They are found largely in the brackish water of river estuaries, and are important food fishes.

**Mullet.** In heraldry, a star of five, six, or more points. It is the mark of cadency (*q.v.*) for the third son and his house. When borne pierced, mullets undoubtedly represent spur rowels. They differ from stars which have wavy points.

**Mulligatawny** (Tamil, *milugattannir*, pepper water). Soup made hot with curry-powder. Boiled fowl and rice form a usual basis, though other meat may be used.

**Mullingar.** Market and co. town of Westmeath, Irish Republic. Almost encircled by the Royal Canal, it stands on the Brosna river, 50 m. W.N.W. of Dublin, and is a junction on the state rlys. The buildings include the R.C. cathedral for the diocese of Meath and those erected for county business. There is a trade in agricultural produce, and a few manufactures; important horse and cattle fairs are held. Pop. (1956) 5,884.

**Mullion.** In architecture, the vertical division between the lights of a window. It originated with the



Mullion. Window  
with stone mullion,  
indicated by A

reduction in width of the solid pier (*q.v.*) or piers between coupled lancet windows, and is mainly a development of late Gothic building. In church architecture and that of large domestic dwellings, the mullion is of stone, in lesser structures of wood. The traditional mullion of the 15th century is a splayed or moulded shaft, but with the spread-

ing of Renaissance influences this gave place to a rectangular shaft scrolled with a floriated or arabesque design; the Tudor mullion is mainly like this. In pure Renaissance work mullions disappear.

**Mullion.** Village and parish of Cornwall, England. It stands on Mount's Bay, 5 m. N.W. of Lizard Head. It has an old church, St. Melan's, in which are some interesting carved bench ends. Mullion Cove, or Porthmullion, a beauty spot, belongs to the National Trust. It can be reached by road from Helston. Pop. 954.

**Mulready, WILLIAM** (1786-1863). British painter. Born at Ennis, Clare, Ireland, April 1, 1786, he removed with



William Mulready,  
British painter

his family from Dublin to London in 1792. A pupil of Baynes and Banks, the sculptor, he entered the R.A. schools in 1800. In 1802 he gained the silver palette of the Society of Arts, in 1804 exhibited at the R.A., and between 1807 and 1809 illustrated children's books. He painted mainly genre pictures in the style of the Dutch masters, but later developed a more personal manner. He died in Baywater, July 7, 1863.

Mulready's best pictures include *Choosing the Wedding Gown*, *The Sonnet*, *The Convalescent*, all in the Victoria and Albert Museum, South Kensington; *The Bathers*, *The Toy Seller*, both in the National Gallery of Ireland; *The Last In*, Tate Gallery. He designed the first penny postage envelope, 1840. This Mulready envelope bore on its face an allegorical representation of Britannia sending out messages all over the world by means of elephants, etc., and was effectively caricatured by John Leach in *Punch*. Perfect specimens are rare and much valued by collectors.

**Multan OR MUOLTAN.** Division and district of West Pakistan. The division comprises six districts in the S.W. of the former Punjab prov. A third of the area is cultivated, wheat and cotton being the chief crops. The dist. consists of the S. of the Bari doab. Rainfall is only 6 ins. per annum, and cultivation, which covers a quarter of the area, is entirely dependent upon artificial irrigation. Area, div., 16,761 sq. m.; dist., 5,653 sq. m. Pop. (1956 est.) division, 6,953,000.

**Multan** OR MOOLTAN. City of West Pakistan, on the Chenab below its confluence with the Ravi. A town of great antiquity, it has been identified as the capital of the Malli who were conquered by Alexander the Great. Multan is a great trading centre, which collects cotton, wheat, wool, etc., for export S. down the Indus valley, and supplies Afghan traders with indigo, cottons, sugar, and shoes in exchange for drugs, raw silk; and spices. It makes shawls and carpets. Pop. (1951) 190,122.

**Multatuli.** See Dekker, E. D.

**Multiple** (Lat. *multiplex*, with many folds). Term applied to something having many parts. A multiple shop (*q.v.*), business owns many shops; multiple stars are a cluster of three or more individual stars relatively isolated in space; the law of multiple proportions is known to chemists. Multi- (Lat., many) may replace multiple as an adjective, *e.g.* multi-purpose tool.

In mathematics a multiple of a number has the latter as one of its factors; 35 is a multiple of 5 and of 7, while  $8a^3$  is a multiple of  $2a$ . A common multiple of certain numbers has each of them as one factor: thus 420 is a common multiple of 2, 3, 5, 7, since each of those numbers will go into it exactly. The least common multiple (L.C.M.) of certain numbers is the smallest number that has each of them as a factor; thus, 210 is the L.C.M. of 2, 3, 5, 7. Many mathematical operations require the resolution of multiples into their factors and the elimination of common factors.

**Multiple Shop.** Shop operating a number of branches under the same ownership. The term covers not only chain stores (*q.v.*), but also

with growing prosperity opened branches. Others started as wholesalers, later selling goods to the public direct and thus receiving both wholesale and retail profits. "Tied" public houses are in a sense branches of a multiple shop.

Many retailers entered the wholesale trade, and their goods, becoming known to the public, were distributed not only through the firm's own branches, but also by local retailers acting as agents. The advantages of the multiple trader over the small shopkeeper are a widespread goodwill and the ability to buy on a larger scale. Many multiple shops have also effected economies not available to the small trader by forming their own subsidiaries to deal with building, transport, etc.

**Multiplication.** In mathematics, the operation of repeated addition. Multiplication of £1 10s. by 3 means £1 10s. plus £1 10s. plus £1 10s. The process is indicated by the sign  $\times$  ( $7 \times 12 = 84$ ), or by a dot on the line ( $7.12 = 84$ ), or by placing a multiplier outside a bracket  $3(6 - 2) = 12$ . In algebra simple juxtaposition with or without brackets is generally sufficient (thus  $ab$  means  $a$  times  $b$ ). Repeated multiplication of a number by itself is denoted by an index:  $3^4$  means  $3.3.3.3$ , or 81. Such a product is termed a power of the number; here the 4th power of 3.

Multiplication may be lightened by using tables of squares, of quarter-squares (which use the fact that  $ab = \frac{1}{4}(a+b)^2 - \frac{1}{4}(a-b)^2$ ), specialized tables of areas, volumes, interest, wages, prices, etc., tables of logarithms (*q.v.*), and by slide rules, calculators, and calculating machines (*q.v.*). See Algebra; Arithmetic.

### M u m b l e s.

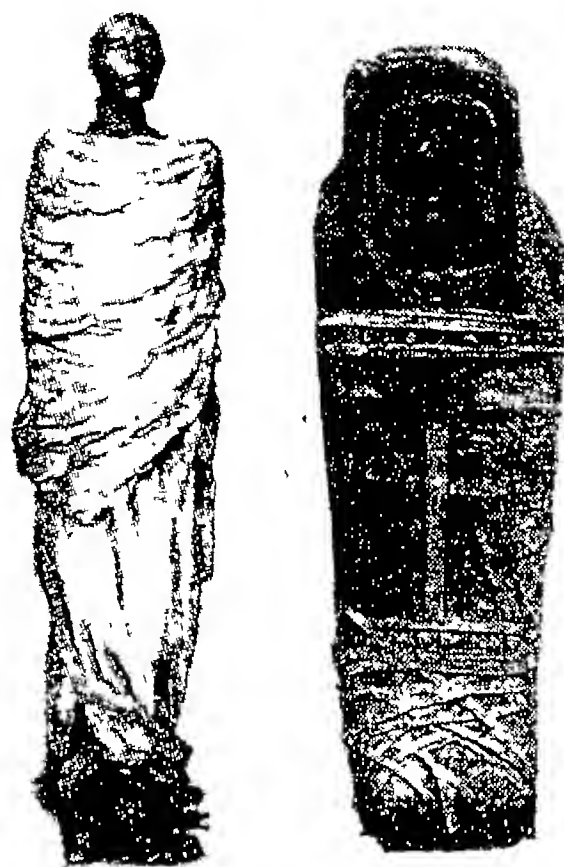
Village and watering-place of Glamorganshire, Wales. It stands on the W. shore of Swansea Bay on the non-nationalised Mumbles light rly. (electric). Oyster fishing is carried on. Mumbles Head, at the W. end of

the bay, includes two small islands, on one of which is a lighthouse.

**Mumbo Jumbo.** Name of a spirit worshipped by the Mandingos of W. Africa. Mungo Park relates that he is invoked for the purpose of punishing women offenders, after which a man appears,

disguised in the garb of Mumbo Jumbo, ties the culprit to a post, and scourges her. In a wider sense the term is applied to any object of irrational superstition.

**Mummy** (Arab. *mumiya*, bitumen). Dead body embalmed with preservative substances in prepara-

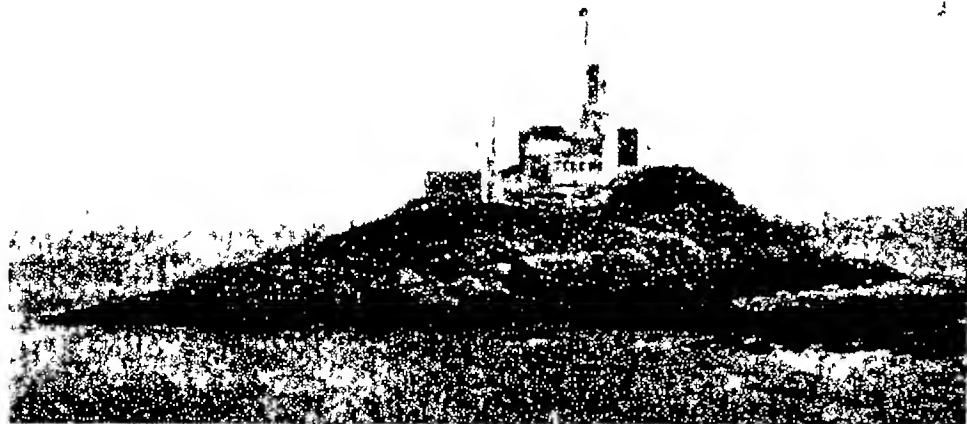


Mummy. Examples of the embalmed and swathed bodies of Egyptians who died 3,000 years ago

tion for burial. In Neolithic Egypt interment in skins or mats in sand-pits resulted in a measure of preservation by natural desiccation. When closed coffins were devised, the speedier decay of the body led to experiment with artificial preservatives, at first perhaps limited to crude natron. The earliest attempt at mummification yet found came from a II dynasty tomb at Sakkara; the earliest mummy enswathed in bandages smeared with resinous paste from a V dynasty tomb at Medum.

In the course of centuries elaborate methods of preserving the body chemically were evolved (see Embalming). Each limb and digit was then separately swathed in mummy-cloth, consisting of linen bandages 2 to 10 ins. wide and up to 17 ft. long. An outer sheet 8 ft. by 4 ft. lay over all.

The bodies, laid out in the extended position, were protected by amulets and ritual texts, enswathed in bead network, accompanied by mummy-like statuettes called ushabtis, enclosed in one or two mummy-cases of wood, cartonnage, or faience, protected by wooden coffins, and, if royal or wealthy personages, enshrined in stone sarcophagi. The face was sometimes encased in a plaster mask, out of which grew, after 100 B.C., the Greco-Roman custom of placing portraits in tempera over



Mumbles, South Wales. Lighthouse and telegraph station off Mumbles Head  
Frith

businesses not originally founded as multiple shops which have opened new branches to take advantage of increasing trade. Multiple shops in Great Britain are organized on various lines. Some are chain stores proper. Others began with a single store and



the enswathed head. Christian Copts continued the practice in various modified forms until about the eighth century.

Mummification was applied also to sacred animals, such as the cat that personified the goddess Bast, and the bulls sacred to Apis and Buchis. In Ptolemaic times all animals of the species secured this form of immortality, and great cemeteries have been found of cats at Bubastis, fish at Esna, baboons and ibises at Hermopolis, etc. These mummied animals were sometimes gilded and enclosed in coffins.

In 1881 and 1898 there were recovered at Thebes hoards of royal mummies, which had been taken from their original tombs in order to frustrate tomb-robbers. Removed to Cairo, they were found to include the mummied remains of famous pharaohs of the XVIIIth and XIXth dynasties, including Thothmes III, Amenhotep III, Seti I, Rameses II, and Merenptah.

The Incas of Peru also practised mummification; their mummies were arranged in a flexed position, knees to chest, and wrapped in cloth. Mummies of the ruling Inca caste, kept in the chief temple at Cuzco, were brought out for festival occasions; there the Spanish invaders found them.

**Mumps** OR EPIDEMIC PAROTITIS. Acute infectious disease. The micro-organism responsible has not yet been isolated, but is almost certainly a filterable virus. It is most frequent in childhood and adolescence, males being more often attacked than females, and is generally more prevalent in spring and autumn than at other seasons. The incubation period is from two to five weeks. The onset is marked by fever, which rarely exceeds 101° F., but exceptionally may be as high as 104° F. Pain is felt below the ear, and within 48 hours there is marked swelling of the neck and cheek. A day or two later the other side usually becomes swollen as well, as may the glands under the chin.

The patient finds difficulty in opening his mouth, and speech and swallowing are affected. After a week or 10 days the swelling subsides and recovery is rapid. Risk of conveying the disease to others is slight after disappearance of the swelling. Swelling and inflammation of the testes in males and of the breasts and ovaries in females may arise, but usually are serious only in the male, for whom mumps may be a cause of sterility as destroying sperm-producing tis-

sues. Treatment consists in keeping the patient in bed with light, soft diet and attention to working of the bowels. Pain in the neck may be relieved by applying either hot or cold compresses.

**Muncaster Castle.** Residence at Ravensglass, Cumberland, England, until 1917 the seat of Baron Muncaster. On the site of a Roman fortress known as Mulcastre, or the castle on the meols or sandhills, it is half-way up Muncaster Fell and commands beautiful views up the valley of the Esk. In the possession of the Pennington family since the Conquest, it was rebuilt in 1800. After the battle of Hexham, 1461, Henry VI took refuge here, and is said to have given to Sir John Pennington the curious glass cup, known as The Luck of Muncaster, from which the family have been baptized ever since.

**Munch,** EDVARD (1863-1944). Norwegian painter. Born at Loften, Dec. 12, 1863, he studied art in Oslo and worked with an Impressionist group in Paris. Influenced by Seurat's *pointillisme*, he held his first exhibition in Berlin, 1892, and so revolutionary was his style that the show had to be closed. He painted in 1907 his Frieze of Life, a masterpiece which was sold and distributed between museums in Oslo, Berlin, and Lübeck. At the greatest of Munch's exhibitions, in 1927, nearly 500 works were shown. Essentially an innovator, he founded the German expressionist movement. His work was banned by the Nazis in 1933. He died in Oslo, Jan. 23, 1944.

**Munchausen,** OR MÜNCHHAUSEN, KARL FRIEDRICH HIERONYMUS, BARON VON (1720-97). German hero of incredible adventures. Born at Bodenwerder, Hanover, May 11, 1720, he was a cavalry officer in Russian campaigns against the Turks, retired in 1760, and died Feb. 22, 1797. A collection of the stories attributed to him, compiled by his compatriot and acquaintance, Raspe, and taken in part from Bebel's *Facetiae Bebelianae*, 1508, and from Lange's *Deliciae Academicæ*, 1765, was first published in English under the title of Baron Munchausen's Narrative of his Marvellous Travels and Campaigns in Russia, 1785. Later editions contain matter stolen from Lucian's *True History* and stories designed to ridicule Montgolfier's balloon ascents, Bruce's African explorations, and other contemporary sensations. Many stories in the first edition may be regarded as

authentic Munchausen, whether actually true or false.

**München-Gladbach.** Town of W. Germany, in North Rhine-Westphalia. It is 12 m. W. of Düsseldorf, and is famous as a centre of the textile industry. Clothing is made, and there are metal, engineering, and electrical industries. It was founded by a count of Charlemagne's court, who built the first church: a cathedral erected in 975 stood until the town was virtually destroyed by bombing and ground fighting in the Second Great War. It had also a baroque town hall, 1663, but was otherwise modern. From ancient times a seat of linen manufacture, it rapidly developed in the 19th century. During 1929-33 it was united with Rheydt and Odenkirchen. Pop. (1955 est.) 144,830.

After the German surrender in 1945 München-Gladbach lay in the British zone of occupation, and in 1952 a site near here was chosen as joint h.q. of British occupation forces.

**Muncie.** City of Indiana, U.S.A., the co. seat of Delaware co. It stands on the White river, 55 m. N.E. of Indianapolis, and is served by several rlys., including an extensive inter-urban electric system. It has glass and glassware industries, and manufactures iron and steel, motor vehicles, clothing, and gas engines. Coal and natural gas are obtained locally. Settled in 1834, Muncie received a city charter in 1865. This was the place described in various books by R. and H. Lynd as Middletown. Pop. (1950) 58,479.

**Munda.** Primitive tribe in N. India. Numbering 700,000, they live mostly in Bengal, Bihar, and Orissa, though some work on Assam tea plantations. Dark-brown and long-headed, one-third of them are Hinduised, and a few are Christian. The Munda sub-family of languages, spoken by nearly four million people, includes the Santali, Mundari, Bhumij, and Ho dialects of Kherwari, besides Juang and Kurku. It forms, with the Mon-Khmer sub-family, the Austroasian family. See *Austrie*; Kol.

**Munday,** ANTHONY (1553-1633). English writer. A Londoner, he was in turn stationer's apprentice, actor, writer of pamphlets against the Jesuits, messenger of the queen's chamber, and City pageant-writer. Concerned in 18 plays, among them *Sir John Oldcastle*, and *The Downfall of Robert, Earl of Huntingdon*, he translated romances, including *Palladino of England*, from the

French and Spanish, wrote ballads, and revised Stow's Survey of London. An industrious but inferior writer, he was attacked by Jonson and Marston. He was buried in S. Stephen's church, Coleman Street.

**Mundella**, ANTHONY JOHN (1825-97). British politician. Born in Leicester, March 28, 1825, of



A. J. Mundella,  
British politician  
Russell

mixed Italian and English parentage, he was apprenticed to a hosiery manufacturer, and in 1858 had become a partner in the Nottingham firm of Hine and Co. Active in municipal politics, he won fame in 1866 by his establishment of one of the earliest conciliation boards for the settlement of trade disputes. In 1868 Mundella was returned as a strong Radical to the house of commons by Sheffield. In 1880 he entered Gladstone's government as vice-president of the council, and was responsible in 1881 for the Act which extended the system of compulsory education, and in 1882 for a new and important educational code. President of the board of trade in 1886, he created the labour department. In 1892 he returned to the board, and continued his efforts to better the conditions of workers, but retired in 1894, owing to a public inquiry into the liquidation of a company with which he had been connected. He was returned to parliament unopposed for Brightside, Sheffield. He died July 21, 1897.

**Münden**. W. German town, in Lower Saxony. It is at the point where the Fulda and Werra form the river Weser, 15 m. S.W. of Göttingen, and is a rly. junction, river port, and health resort. Carborundum, chemicals, rubber, tobacco, and wood provide industries. There are two palaces of the Brunswick dukes, dating back to 1070 and 1619; churches of the 15th and 17th centuries; timber buildings; and memorials of the siege by Tilly in 1626. Pop. 20,300.

**Munden**, JOSEPH SHEPHERD (1758-1832). British actor. Born in London, he worked in a shop before joining a strolling company. In the provinces he made a reputation as a comedian, and also managed a group of theatres. He appeared in London in 1790, and at Covent Garden and The Hay-

market became the most popular comedian of his time. From 1813 he acted at Drury Lane until his retirement in 1824. He died Feb. 6, 1832. Munden played Shakespeare's comic characters and appeared in *The Beggar's Opera*, *Tristram Shandy*, and *Every Man in His Humour*. Lamb wrote an essay on his art.

**Mundesley**. Parish and seaside resort of Norfolk, England. It lies 7 m. S.E. of Cromer and has a rly. station. Once a fishing village, it is a popular holiday resort. Its church has been restored. Encroachment of the sea has been checked by walls. The cliff scenery is impressive. Pop. (1951) parish, 1,227.

**Mungo**. A short, fine, woollen fibre recovered from densely compacted rags or cloth-cuttings. It is used in conjunction with longer fibre in manufacturing new cloth, especially in obtaining a close and fine surface upon the new goods.

**Mungo** (c. 518-603). Scottish saint, also known as S. Kentigern (*q.v.*). The name Mungo is formed from two Gaelic words meaning "dear one."

**Muni**, PAUL (b. 1895). An Austrian-born American film actor. Born Sept. 22, 1895, of Jewish parents at Lvov (then Lemberg, Austria), he went to the U.S.A. as a child, was educated in Chicago, and performed at the Yiddish Theatre, N.Y., 1908. A member of the Jewish art theatre company, he toured the country on the Yiddish stage until 1926. Entering films in 1929, he proved to be a great character actor. He was a gangster in *Scarface*, 1932; impersonated Pasteur, 1936, and Zola, 1938; and played a Chinese in *The Good Earth*, 1938. He appeared on the London stage in the leading role in *Death of a Salesman*, 1949.

**Munich** (Ger. *München*). Capital of Bavaria, generally reckoned to rank as Germany's third largest city. It stands on the river Isar, at a height of 1,700 ft. (and is thus the highest large city in Germany) on a plateau adjoining the Alps; its climate, owing to its location, is very variable. Munich, the centre of communications not merely for Bavaria, but for the lines Berlin-Rome, Paris-Istanbul, etc., has a number of stations and an important aerodrome; and is one of the most important centres



Munich arms

of German industry, art, and literature. Before the Second Great War, Munich university was second only to that of Berlin. In the main a modern town with wide, regular streets, beautiful gardens and squares, Munich preserved many remarkable buildings and monuments, *e.g.* old gates like the Karlstor and the Isartor, S. Peter's basilica (begun 1181), the cathedral of Our Lady (1468-88) with its curious, cupola-crowned twin towers, the Greek church S. Saviour's (1494), S. Cross (1480-85); the old town hall (1470, renovated), the old armoury, later a museum (1500); the great palace, 16th to 19th century; the Antiquarium, the Grottenhof, the Treasury, the Royal theatre (1750-56), the Preysing palace (1723-28), the Jesuit church of S. Michel (1583-97). Most of these, as well as numerous Renaissance and Baroque piles, were laid in ashes by Allied air raids during the Second Great War.

The New and the Old Pinakothek and the Glyptothek contained masterpieces by Rembrandt, Dürer, Titian, Raphael, Rubens, Holbein; famous antique sculptures; the best of the modern and 19th century schools of art. The Schackgalerie displayed all outstanding 19th century masters, from Spitzweg to Boecklin; the National museum held medieval treasures; and the huge German museum, completed only between the two wars, showed the development of technique and mechanics. There were scores of other art and art-craft collections, and a world famous art school; Germany's second biggest library with 1½ million vols., including 50,000 manuscripts; a national and a number of other outstanding theatres. Besides the university and the technical university (together 430 teachers, 13,000-14,000 students) there were academies of music and of art and many other scientific institutes and learned societies. The supreme finance court of the Reich and other authorities were located at Munich, as well as the Bavarian government, the seat of an archbishop and of a papal nuncio.

Schwabing, a suburb, is mentioned in the 8th century; Munich itself, whose name derives from a monks' settlement, became a largish village c. 1158 A.D. under Henry the Lion. It was a flourishing town in the 15th century, was a seat of the arts in the 16th, a centre of tourism in the 18th, and a trade and industrial centre in the



19th century. Brewing, building, printing industries were first; followed by locomotive and motor engineering, textile and furniture making, electric and optical industries, and the famous Nymphenburg porcelain manufactory.

Munich's face was altered considerably when Hitler turned it into the Nazi party h.q. in 1931; but few of the huge, dull buildings he erected survived the Second Great War.

Munich became important first as the centre of the salt trade of the neighbouring salt mines of Reichenhall, Hallein, and Berchtesgaden; its city rights were confirmed 1294, and the emperor Louis the Bavarian (1314-47) gave it many privileges. Italian and other artists came, galleries were created under Albrecht V (1550-79), the academy of science was founded 1759, that of art 1809; but it was King Louis I (1825-48) who secured Munich's reputation as the city of art, "Isar-Athens," and Louis II (1864-86), Richard Wagner's Maecenas, who joined music and the theatre to its embellishments. Here, Nov. 8, 1918, the first republic was proclaimed in Germany, and on April 7, 1919, a short-lived Soviet republic; here, Nov. 8-9, 1923, Hitler tried his first "putsch." It was one of the centres of the 1944 July Plot (*q.v.*).

During the Second Great War, Munich was captured on May 1, 1945, by the U.S. 7th army.



Munich, Bavaria. View of the city taken in 1945, showing some of the damage sustained in air raids during the Second Great War

and after the surrender of Germany a few days later came within the U.S. zone of occupation. It was rapidly reconstructed. Pop. (1955 est.) 968,230.

**Munich Agreement.** Agreement signed at Munich, Sept. 30, 1938, by Germany, Great Britain, France, and Italy. It confirmed the cession by Czecho-Slovakia to Germany of the Sudeten German area to which, under pressure by

Great Britain and France, Czecho-Slovakia had agreed on Sept. 21, and provided that Czech evacuation and German occupation of the area should take place between Oct. 1 and Oct. 10 in stages in accordance with markings on a map attached to the agreement; and that conditions governing the evacuation should be laid down by an international commission composed of representatives of Germany, the U.K., France, Italy, and Czecho-Slovakia, which commission should also ascertain what further areas were of predominant German character, and should determine the final frontiers between Germany and Czecho-Slovakia. With the occupation of Bohemia and Moravia by Nazi forces, March 15, 1939, the agreement became a dead letter. See Czecho-Slovakia.

**Munich Crisis.** Popular name in Great Britain for the situation of international tension in Sept., 1938. The agreement which eased it was signed at Munich, hence this name. International tension had been growing since Hitler's re-occupation of the Rhineland in 1936, and after he occupied Austria, March, 1938, it became alarm. Czecho-Slovakia, where the German-speaking inhabitants of the Sudeten area had for some time been agitating for autonomy under the Nazi-inspired leadership of Henlein, appeared to be next on the list of victims.

gunning of Aug., Lord Runciman was sent to Prague by the British govt. as an "unofficial adviser" to the Czech govt. on the Sudeten German question; but in Sept. rioting broke out in the Sudeten area, Henlein demanding its inclusion in the Reich. His party was suspended by the Czech govt. and he himself fled to Germany.

In this situation, Chamberlain (*q.v.*), the British prime minister, believing that war was all but inevitable, flew to Berchtesgaden on Sept. 15 to see Hitler. On his return, Daladier, the French premier, and Bonnet, the French foreign minister, flew to London. Under the joint pressure of France and the U.K., Czecho-Slovakia agreed to the cession to the Reich without plebiscite of areas including more than 50 p.c. Sudeten Germans, and the neutralisation of the rest of the country. Chamberlain flew to Godesberg, Sept. 22, for a second meeting with Hitler, who now insisted on the handing over by Oct. 1 of considerable areas shown on a map he presented. Back in London, Chamberlain again met Daladier and Bonnet.

Meanwhile President Benes had ordered a general mobilisation of the Czech army at 10 p.m. on Sept. 23. By midnight on the 24th France had more than a million men under arms; the British home fleet had left Invergordon for an unknown destination and the Mediterranean fleet was concentrating at Alexandria. In a speech made before 30,000 people in Berlin, and broadcast, Hitler on Sept. 26 attacked Czecho-Slovakia and Benes violently, announcing that his patience was nearing its end, but insisted that if this question were settled according to his demands there would be no more international problems.

In the U.K., distribution of gas masks to the people began on Sept. 25; parliament, which was in recess, was summoned to meet on the 28th. A.A. and coastal defence units of the Territorial army, the Observer Corps, and defensive units of the Auxiliary Air Force were called up on the 26th; and the War office announced the formation of a women's service, the Auxiliary Territorial Service. Chamberlain broadcast to the nation on the evening of Sept. 27, and in London trenches were being dug in the parks to serve as rough air raid shelters. The fleet was mobilised on Sept. 28, on which day Chamberlain gave the commons an account of his negotiations. While reporting that he had that

France already in 1937 had assured Czecho-Slovakia that she would stand by their treaty of 1924 if Czecho-Slovakia were attacked; she repeated the assurance in March, 1938, when the Soviet government also gave her a pledge of immediate assistance in case of attack, and the German government assured her of its determination to respect her integrity. But tension still grew. At the be-

morning telegraphed to Mussolini asking him to intervene, a message was handed to him: it was an invitation from Hitler to Chamberlain and Daladier to meet himself and Mussolini at Munich the next day. At this meeting, to which no Czech representative was admitted, the dismemberment of Czecho-Slovakia in accordance with Hitler's demands was confirmed. On his return Chamberlain was wildly acclaimed. He brought with him a document signed by Hitler and himself in which each agreed that any differences between their two countries should be resolved by peaceful means. Before cheering crowds in Downing Street, Chamberlain claimed that he had brought back "peace with honour," adding: "I believe it is peace for our time." See Munich Agreement.

**Municipal Bank.** The only bank owned by a municipality in England is that of Birmingham, established in 1916 largely by the efforts of Neville Chamberlain, then lord mayor. It has for objects the receipt of deposits and their use primarily as loans to depositors for the purchase of dwelling houses and land in Birmingham. The bank is managed by a committee appointed annually by the city corporation. With certain exceptions, it restricts the amount of money which may be deposited annually, and withdrawn at any one time, by the depositors, to whom it allows interest. In 1946 the amount standing to the credit of depositors was £74,281,359, more than half in government securities.

**Municipal Corporations Act.** Measure passed by the parliament of the U.K. in 1835 for reforming the municipal corporations of England and Wales. Until then the boroughs were governed in a great variety of ways, and the corporations were frequently corrupt and never democratic. The Act provided a uniform constitution for all boroughs, which were

to have a council composed of mayor, aldermen, and councillors. Another Municipal Corporations Act followed in 1882. To look after



Munich Crisis. Neville Chamberlain acclaimed at Downing Street on his return from Munich, September 30, 1938, when he believed that he had brought back "peace for our time"

the interests of these bodies there is in London an Association of Municipal Corporations.

**Municipal Election.** Election of the members of a borough (or burgh) council in the U.K. Councillors are chosen for three years, but one-third of the council retires annually, so that municipal elections occur every year. The mayor and aldermen are elected by the councillors, the former for one and the latter for six years. Regulations for municipal elections are laid down in the Municipal Corporations Act of 1882, as subsequently amended. By the Representation of the People Act, 1945, the franchise, previously confined to owners or tenants of premises, was extended to all those qualified to vote in parliamentary elections. See Borough; Election; Local Government.

**Municipality.** Word derived from the Latin *municipium*, a term which was applied to urban communities subject to Rome, whose members were liable to all the burdens of Roman citizenship and enjoyed the more important of its privileges. These privileges included a large measure of local autonomy. At the present day the word is used to connote any corporate city or town organized for self-government. See Borough.

**Municipal Trading.** Term to denote the provision by a local authority of a service or commodity for which a direct charge is made. Commoner forms of municipal trading are the supply of water, gas, electricity, tram and bus services, markets, baths and swimming baths, cemeteries, housing, and meals (in civic restaurants, canteens, etc.). A trading element may enter into the collection and disposal of refuse and salvage, maternity hospitals and other medical services, smallholdings, private street works, parks and places of recreation. Some local authorities own harbours, docks, piers, canals, quays, and ferries. Birmingham has a Municipal bank (*q.v.*).

Since 1900 there has been a great growth in municipal trading, partly as an expression of civic spirit—as an alternative to the control of private utility supply companies—to meet needs not met by private enterprise; and partly as a result of two wars. Some municipalities protested strongly against the complete substitution of regional or national control for municipal control of undertakings concerned with electricity, gas, and transport. Housing and Town Planning Acts have increased the opportunities for municipal trading in building materials, domestic fittings, etc.

Proposed extensions of municipal trading are a frequent cause of acute controversy. In their favour it is argued that the local authority can divert to public use profits that would otherwise accrue to monopolists; that prices can be reduced and services improved; that public health can be advanced. Those opposing municipal trading claim that it is seldom so efficient as private enterprise since it lacks the spur of competition; that it creates opportunities for corruption; that it generally increases rates.

In 1942-43 the receipts of local authorities in England and Wales from trading services and the corresponding expenditure (given in brackets) were as follows (in £ millions): cemeteries, 1.4 (2.2); water, 25.6 (27.4); gas, 26.3 (26.1); electricity, 76.2 (76.3); transport, 34.3 (33.1); harbours, docks, piers, canals, and quays, 13.3 (15.0); other trading services, 12.1 (12.8). Expenditure includes contributions to sinking funds for the repayment of capital.

**Muni River Settlements** OR RIO MUNI. Mainland portion of the colony of Spanish Guinea (*q.v.*).



**Munitions** (Lat. *munire*, to fortify). Term originally applied to the projectiles discharged from firearms, as distinct from armaments, which referred to the actual weapons. In modern warfare, however, the term munitions covers all warlike equipment and stores except clothing and food.

Until the First Great War each of the fighting services of Great Britain was responsible for the supply of its own munition requirements and the development and production of new weapons, most of the demands being met through the royal ordnance factories. But when the war began, the method of supplying munitions proved inadequate to arming and equipping the increasing numbers of men being absorbed into the army. Munition factories were dependent upon Germany for many essential components and materials, including sulphuric acid and toluol, which were essential in the manufacture of high explosives.

During the campaign of 1914-15, the British c.-in-c. repeatedly complained that his artillery ammunition was so scarce that guns had to be rationed to four rounds a day, while the infantry were obliged to make their own hand-grenades from empty jam and meat tins. At that time, munition plants were working at half-pressure, few were running night shifts, and trade union regulations hampered production. There was a lack of coordination between the munition demands of the navy and army, and these services frequently overlapped each other in the placing of contracts for even the same type of article.

Despite the complaints of commanders in the field, the govt. emphatically denied any shortage, and on April 20, 1915, Asquith, the prime minister, quoting Lord Kitchener, minister for War, dismissed the criticisms as mischievous. On May 14, 1915, the military correspondent of *The Times* stated that British operations at Festubert had failed because of the lack of suitable ammunition for reducing German strongpoints. A week later an article in the *Daily Mail* accused Kitchener of starving the army of high explosive shells. Although these articles aroused some resentment, it was difficult to deny the allegations, and on June 9, 1915, the govt. established a ministry of Munitions to expedite and control production of munitions of war for army and navy. Lloyd George resigned office as chancellor of the exchequer to

organize the new department, and within a few months the ministry was turning out war material on an increasing scale. Strikes and lock-outs were forbidden, and profits limited. Munition towns were built at Gretna and elsewhere, and by the end of the war 2,300,000 men and 900,000 women were employed on munitions. The total expenditure of the ministry from its inception until 1920, when it was succeeded by a disposals board, was £2,019,507,941. The ministry was also responsible for the development of new equipment, and designed special devices for specific military requirements.

In Aug., 1939, the British govt., seeking to avoid repetition of the 1914-15 munition problem in any future war, set up a ministry of



Sir Alfred Munnings, P.R.A., 1944-49. This distinguished painter of horses at work in his studio. The canvas portrays the start of a race at Newmarket

Supply to direct and coordinate production of all war materials for the army. The navy and R.A.F. were not at first within its purview. It was given wide powers over labour and materials. Eventually the ministries of Supply and of Aircraft Production became responsible for the development, production, and distribution of munitions, equipment, and clothing to the army, navy, and R.A.F. In 1943, the peak period of production, 4,250,000 men and women were engaged on munitions. After the war the ministry of Aircraft Production was merged into that of Supply, which continued to function as a purchasing agency for the government rehabilitation schemes. See Supply, Ministry of.

**Munkacsy, MICHAEL** (1844-1900). Hungarian painter. Born at Munkacsy, Feb. 20, 1844, he was really named Lieb. After a youth spent in poverty he studied at the art society in Pest and made his way to Vienna, Munich, and Düsseldorf

where he painted the *Last Days of a Condemned Prisoner*. In 1872 he settled in Paris, where his *Milton Dictating Paradise Lost* won a medal in 1878. After a brilliant career he became insane and died at Emdenich, Germany, May 1, 1900. He is best known by his immense religious pictures, *Christ Before Pilate*, and *The Crucifixion*, sold for more than £30,000 each, and *Eccle Homo*. The *Apotheosis of the Renaissance* was painted for the ceiling of the Austrian art historical museum, 1884. *Pran. Moonkachy*.

**Munku Sardyk**. Sacred mountain of Central Asia. On the borders of Outer Mongolia, Tannu-Tuva, and the Buriat-Mongol republic of Russia, it is 7 m. N. of Kossogol, and from its glaciers rise the Oka, Irkut, and Ulu-kem, one of the head-streams of the Yenisei. It was first ascended by Radde in 1859. Graphite is found near. Alt. 11,450 ft.

**Munnings, SIR ALFRED JAMES** (b. 1878). British painter. Born at Mendham, Suffolk, Oct. 8, 1878, he studied art at Norwich and Paris. He early made a reputation as a painter of horses, first exhibiting at Burlington House in 1898, and rendered scenes of race meetings, e.g. *Epsom Downs*, *Derby Week*, also of hunts and gipsy life. In the Tate Gallery are his *City and Suburban Day*; *From My Bedroom Window*; *Their Majesties' Return from Ascot*. A.R.A. 1919. R.A. 1925, president of the R.A. 1944-49, he was a stubborn opponent of modern art. He was knighted 1944, and pub. memoirs 1950-52.

**Munro, HECTOR HUGO** (1870-1916). British writer, especially of short stories, under the pseudonym Saki. Born in Burma, he was at school at Exmouth and Bedford before joining the Burma mounted police. He began about 1890 to write articles as Saki in the *Westminster Gazette*, and political satires, e.g. *The Westminster Alice*. Short stories, many of them models of compression, were collected in several volumes, including *Reginald*, 1904; *Reginald in Russia*; *The Chronicle of Clovis*. They show a mastery of form allied to a biting wit and an outstanding gift of describing the macabre. A novel, *The Unbearable Bassington*, anticipated ten-



Hector H. Munro ("Saki"). British novelist. *Hoppe*

dencies of post-war satires. He wrote *The Toys of Peace*, to which a memoir by R. Reynolds was added in 1919; *The Square Egg*, with biography by E. Munro, 1924. Munro, who acted as correspondent in St. Petersburg and Paris 1902-08, served in the First Great War and was killed Nov. 14, 1916, near Beaumont-Hamel.

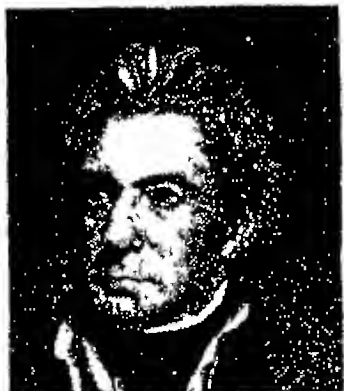
**Munro, HUGO ANDREW JOHNSTONE** (1819-85). British scholar. Born at Elgin, Oct. 19, 1819, he was educated at Shrewsbury and Trinity College, Cambridge. A brilliant classical scholar, he became fellow and lecturer at Trinity and was professor of Latin in the university, 1869-72. He died in Rome, March 30, 1885. Munro's reputation rests on his edition and translation of *Lucretius*, 1860-64, regarded as one of the finest modern examples of classical scholarship. He also wrote *Criticisms and Elucidations of Catullus*, 1878.

**Munro, NEIL** (1864-1930). Scottish novelist, born at Inveraray, June 3, 1864. He became editor of the *Glasgow Evening News* in 1918. He had attracted attention by stories collected as *The Lost Pibroch*, 1896. Many of his tales had a setting in the Western Highlands; they included *John Splendid*, 1898; *Doom Castle*, 1901; *Fancy Farm*, 1910; *The New Road*, 1914; *Jaunty Jock*, 1918. Munro, who also wrote humorous character studies under the pseudonym of Hugh Foulis, died on December 22, 1930.

**Munro, SIR THOMAS** (1761-1827). British soldier and administrator. Born May 27, 1761, the son of a Glasgow merchant, he entered the service of the East India Company as an infantry cadet in 1780, participating in operations against Haider Ali. He was engaged in civil administration 1792-99, and then served against Tippoo Sahib. Later he was appointed administrator of Kanara. Returning home in 1807, he went out again to Madras in 1814 on a mission of administrative reform, but his work being inter-



Neil Munro,  
Scottish novelist



Sir Thomas Munro,  
British soldier

After M. A. Shee, R.A.

rupted by a fresh Mahratta war he defeated the Peshwa in a brilliant campaign. From 1819 until his death from cholera, July 6, 1827, he was governor of Madras.

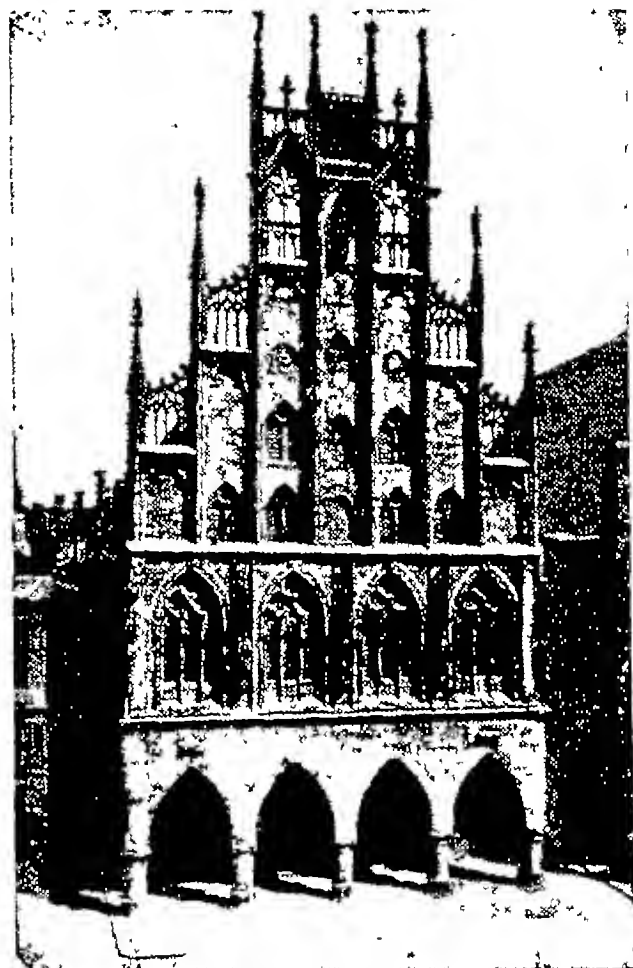
**Munsey, FRANK ANDREW** (1854-1925). American publisher. Born at Mercer, Minn., Aug. 21, 1854, he had some experience as a telegraphist in Augusta, Maine, and then went to New York, where in 1882 he founded *The Golden Argosy*, an 8-page weekly illustrated paper for boys and girls, later known as *The Argosy*. Munsey's Weekly, a periodical for adults started in 1889, became a monthly, *Munsey's Magazine*, in 1891. Owner of *The New York Sun* and *The Baltimore News*, *The All-Story Magazine*, *The Scrap Book*, and other publications, Munsey wrote *Afloat in a Great City*, 1887; *The Boy Broker*, 1888; *A Tragedy of Errors*, 1889; *Under Fire*, 1890; *Derrington*, 1894. He died Dec. 22, 1925.

**Munster.** One of the four provs. of Ireland. In the republic, it includes the 6 cos. in the S.W. of the country, Clare, Kerry, Cork, Waterford, Tipperary, Limerick. Its area is 9,316½ sq. m., making it the largest province. A mountainous region, it contains some of the wildest and also the most beautiful scenery in Ireland. Munster was one of the old Irish kingdoms, and was at one time divided into Thomond, the N. part, and Desmond, the S. part. Its independent kings existed until the 12th century. In the reign of Elizabeth I a president was appointed to govern Munster, which about this time was divided into counties. The name survives, although for administration those of the counties, and of the county boroughs of Cork and Limerick, apply. Pop. (1956) 877,238.

**Munster.** Town of France, in Haut-Rhin department. It stands beneath the Vosges, where two small streams unite, 11 m. W.S.W. of Colmar. It has textile industries, and the buildings include a Romanesque church and a theatre. A Benedictine abbey, founded in the 7th century, was the nucleus of the town, which was made a free imperial city in the 13th century. In the 17th century it passed with Alsace to France; during 1871-1919 it was German. Through the fertile valley of

Munster the river Fecht flows. Pop. (1954) 4,974. Munster Cheese (*q.v.*) takes its name from the town.

**Münster.** Town of North Rhine-Westphalia, W. Germany, former capital of Westphalia.

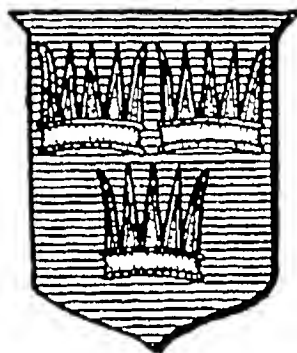


Münster, Westphalia. The 14th-century town hall

About 78 m. N.N.E. of Cologne, on the Aa and the Dortmund-Ems canal, it is a rly. and shipping junction, the centre of an agricultural area, and seat of a university (founded 1773) and an old bishopric formerly of princely rank. It has engineering, iron, wire, cement, milling, brewing, and distilling industries, and trade in Westphalian hams, sausages, pumpernickel, and hand-woven linen. There are scientific institutes, libraries, museums, academies, a theatre, zoological and botanic gardens, hospitals, etc. Pop. (1955 est.) 155,700.

Until virtually destroyed in the Second Great War, it was one of the most beautiful specimens in Europe of a medieval city. Buildings included the huge cathedral, 1165-1265, the churches of S. Lambert, 1450, Our Lady, 1346, S. Ludgerus, 1170, S. Servatius, 13th century, and S. Martin, 1370, old guild halls, patrician houses of 16th- to 18th-century origin, and the bishop's palace. The Gothic town hall, dating from 1313, was the scene of the treaty of Westphalia (*q.v.*), 1648.

Made a bishopric for the future Saint Ludgerus by Charlemagne in 802, Münster (Lat. *monasterium*) was originally a fortified monastery. It obtained civic rights as a Hanseatic town c. 1250. It saw the Anabaptist kingdom of Zion of John of Leyden, 1524. Secularised



Munster arms



1803, and united with Prussia, except for parts of the bishopric that fell to Hanover and Oldenburg, it became a bishopric again in 1821.

In the Second Great War, the German commander in Münster refused to surrender when requested to do so, April 3, 1945. The town was therefore heavily shelled, and when it fell to the British 2nd army was a blazing ruin. After the German surrender, Münster, in the British occupied zone, was a local h.q. of the control commission.

**Munster, EARL OF.** British title held since 1831 by the Fitzclarence family. The 1st earl was George (1794-1842), natural son of the duke of Clarence, afterwards William IV. His other titles were Viscount Fitzclarence and Baron Tewkesbury. Descendants succeeded until in 1928 the title came to Geoffrey (b. 1906), 5th earl, who held under-secretaryships in 1939, 1943-45, 1951-54, and was minister without portfolio 1954-57.

**Münsterberg, HUGO** (1863-1916). German psychologist. Born June 1, 1863, at Danzig, he was educated there and at Leipzig and Heidelberg. In 1891 he became professor at Freiburg, but in 1892 he settled in America as professor of psychology and director of the psychological laboratory at Harvard. In 1911 he was made director of the American Institute in Berlin, where he died, Dec. 15, 1916. Münsterberg upheld the theory of voluntaristic idealism, according to which the will is the essential principle, as opposed to intellectualism, which regards the intellect as supreme and knowledge as derived from pure reason. A pioneer in industrial psychology, he published in 1914 *Principles of Psychology, and Psychology General and Applied*.

**Munster Cheese.** French cheese taking its name from a town in the Alsatian department of Haut-Rhin. Red-rinded and cylindrical, it is a fermented, whole-milk cheese, made from Nov. to April in the Vosges. Though it has a forbidding odour and is not attractive in appearance, it is popular.

**Munthe, AXEL MARTIN FREDRIK** (1857-1949). Swedish physician and writer. Born at Oskarshamn, Oct. 31, 1857, he attended Uppsala univ. and became a fashionable ladies' doctor in Paris and Rome, amassing a large fortune. He was appointed court physician to the king of Sweden, 1903, and to the queen, 1908. Retiring to Capri, where he built the villa of San Michele, he devoted himself to

writing, *Memories and Vagaries* appearing in 1908. His best-selling autobiography, *The Story of San Michele*, 1929, was trans. into many languages. By his own account he narrowly escaped death from cholera and earthquake, a duel and an avalanche; he was long almost blind and a sufferer from insomnia. In 1946 he presented San Michele to the Swedish archaeological institute in Rome and took up residence in the royal palace at Stockholm, where he died Feb. 11, 1949.

**Muntjac (*Cervulus*).** Species of small deer, found mostly in Indian jungles. The upper canine teeth in



Muntjac. Small Indian deer

the male project beyond the lips like tusks. The antlers grow from pedicles of bone forming prolongations of the frontal bone. The female has neither the tusk-like canines nor antlers.

**Muntz Metal.** Alloy of copper and zinc. It admits of being forged and is much used for sheathing, bolts and nuts, pump rods, and other parts of machinery which are to be exposed to the action of sea water or other influences calculated to corrode iron or steel. It was brought into use by G. F. Muntz of Birmingham in 1832. See Alloy; Brass.

**Münzer, THOMAS** (1490-1525). German sectarian and revolutionary. A native of Stolberg in the Harz, he joined the reformers, but in 1521 advocated extreme doctrines, and demanded obedience as an inspired prophet. He is sometimes considered the founder of the Anabaptists. Having planned the murder of his opponents at Zwickau, he fled to Prague, and then appeared at Wittenberg, where he found influential support until Luther arrived and restored order. Münzer retired to Allstedt in Thuringia and set up a communistic theocracy. Expelled in 1524, he took a leading part in the Thuringian peasant revolt. His camp at Frankenhäusen was taken by Philip of Hesse and John of Sax-

ony, May 15, 1525, and Münzer was beheaded at Mühlhausen, May 27. See Anabaptists; Peasants' War; Reformation.

**Mur.** River of Austria and Yugoslavia. It rises in the Eastern Alps in Salzburg, Austria, and flows through Styria past Graz, where its valley is a valuable line of communication on the routes to Vienna from the N. and S.W. Below Radkersburg it enters Yugoslavia and joins the Drave, of which it is the principal affluent.

**Murad I** or **AM RATH I** (1319-89). Sultan of Turkey. Succeeding his father Orkhan in 1359, he conceived the ambition of establishing his empire in Europe, and, favoured by the disorders in the Balkan countries, began his advance. Capturing Adrianople and defeating the kings of Hungary, 1363, and Serbia, 1366, he established his realm as far as Sofia in 1382. The subjugated princes eventually formed an alliance under Lazar, tsar of Serbia, and marched against the Turks, but were defeated at Kosovo, 1389. Murad did not live to reap the fruits of his victory, being assassinated by a Serbian soon after the battle.

**Murad II** (c. 1403-51). Sultan of Turkey. Son of Mohammed I, he succeeded to the throne in 1421, but a series of unsuccessful wars with the Hungarians under Janos Hunyadi led to the treaty of Szegedin in 1444. By this Murad abandoned his sovereignty over Serbia. He twice abdicated in favour of his son, Mohammed, but each time was recalled to the throne by foreign menace. His campaigns against the Hungarians ended with the victory over Hunyadi at Kosovo, 1448. He died at Adrianople.

**Murad III** (1546-95). Sultan of Turkey. Succeeding his father, Selim II, in 1574, he showed indolence and sensuality that made his reign a continual struggle with the janissaries. The first English ambassador was accredited to the Porte in 1583.

**Murad IV** (1611-40). Sultan of Turkey, who ascended the throne in 1623. His minority was the opportunity for grave disorders throughout his realm, which culminated in an attack on the palace at Constantinople, 1631. Naturally of a stern and imperious character, Murad soon earned a reputation for unparalleled ferocity, putting to death during eight years at least 100,000 persons. After a successful campaign against the Persians in 1638-39, he died of gout due to habitual drunkenness.

**Murad V** (1840-1904). Sultan of Turkey. Born Sept. 21, 1840, the eldest son of Abdul Mejd, his whole life, with the exception of a brief interval, was spent as a prisoner, first of his uncle the usurper, Abdul Aziz, and then of his brother, Abdul Hamid II. In 1876 he was proclaimed sultan on the fall of Abdul Aziz, but after three months he was himself deposed in favour of his brother, whose prisoner he remained until his death, Aug. 29, 1904.

**Muraena.** Genus of large fish, resembling the eel. It occurs mainly in the tropic seas, though *M. helenae*, one of the 80 odd species, is found in the Mediterranean. Some of the species are 10 ft. long, and their strong and sharp teeth make them dangerous to fishermen. Most of them are handsomely coloured and marked, and they have been esteemed as table fish since classic times.

**Mural Circle.** In astronomy, name given to an instrument formerly used for measuring the declinations of stars. It consisted of a graduated circle on firm foundations, and carrying a telescope which revolved in the meridian plane. It was superseded by the transit circle (*q.v.*).

**Mural Decoration.** Artistic adornment of wall surfaces with conventional or pictorial designs, either flat or in relief, or with materials decorative in themselves. While mural decoration is subsidiary to architecture, and takes different forms appropriate to the different styles of building, it consists in the application of many other arts, especially painting, sculpture, ceramic, and textile art.

Painting on a flat plaster surface is the most widely diffused method, and is applied, where the climate permits, to exterior as well as interior decoration. Tempera and fresco were generally used by the ancients. The Egyptians employed brilliant and somewhat crude colours. The Cretans decorated their palaces with delicate naturalistic frescoes from 2000 to 1400 B.C. In the classical age of Greece, colour was freely applied to walls, but our knowledge of ancient mural painting is mainly derived from derivative or late styles, Etruscan and Roman, especially the art of Pompeii. Gothic architecture, though providing relatively little flat wall surface, was accompanied by a revival of wall-painting, greatly developed at the Renaissance. Modern attempts at the revival of fresco painting have been sporadic, and not very fortunate.

The use of sculpture for mural

decoration dates from remote antiquity. The Egyptians covered their walls with painted bas-reliefs, often countersunk. The alabaster carvings in very low relief in Assyrian palaces are marvels of technique. In Greece reliefs were sparingly used, chiefly in friezes. Late Gothic employs diaper patterns, and the walls of Muslim buildings are often adorned with sculptured arabesques.

A frequent method in all ages from the Aegean civilization of Crete, through the classical, Mahomedan, and Renaissance styles, has been the application of stucco, gesso, or other kinds of plaster, to form designs in relief on a flat surface. It is often combined with painting and gilding. The Alhambra and other Moorish buildings owe much of their beauty to coloured stucco.

From the glazed brick of ancient Persia was ultimately derived the magnificent Oriental art of covering walls with moulded and enamelled tiles, in which geometrical designs, flower patterns, and Arabic texts are employed. In the Renaissance age, Italian faience and terra cotta were extensively used in mural decoration.

Woven hangings were used from early times, but tapestry is a characteristic art of the Renaissance. Rich effects were produced in the 16th and 17th centuries by stamped leather, silvered and covered with yellow varnish. Painted and printed cloth were cheap substitutes for tapestry. Oak panelling, often richly carved with foliage and fruit, was frequent in Tudor and Stuart England. Wallpaper gradually came into use in the 18th century, and was raised to a fine art by William Morris and others a century later. See Encaustic; Faience; Fresco; Gesso; Glaze; Mosaic; Painting; Paneling; Plaster; Rococo; Sculpture; Sgraffito; Stucco; Tapestry; Tempera; Terra Cotta; Tiles; Wallpaper; Wood-carving.

**Murano.** Island and town in the Venetian lagoon, Italy. It is 1½ m. N.E. of Venice, forming a suburb of that city. The island, 5 m. in circuit, once thickly populated and possessing its own mint, is now largely occupied by vineyards. It has a cathedral dating from about 970, since rebuilt and

restored, and other churches with valuable pictures. The museum is rich in examples of glass-work, for which Murano has been celebrated from the 13th century. Introduced by Byzantine glass workers during the Crusades, the industry declined during the 18th century, but was revived in the 19th. Pop. 5,800.

**Murat, JOACHIM, KING OF NAPLES** (1767-1815). French soldier. Born March 25, 1767, at



*After Gerard*

After Gerard

La Bastide, S. France, the son of an innkeeper, in 1787 he enlisted in a cavalry regiment, and obtained a commission in 1792. Three years later he attracted the attention of Napoleon, and accompanied him to Italy, where in recognition of his services he was made general. Accompanying Napoleon to Egypt, he distinguished himself at the battle of the Pyramids, 1798, and was given command of the cavalry in the Syrian campaign, being largely responsible for the victory of



Murano, Italy.

Rio dei Vetrai, the principal canal of the Venetian island



Abukir. Returning to France, he was active in promoting the consulate, and in 1800 married Caroline Bonaparte, the consul's youngest sister. He crossed the Alps with Napoleon, fought at Marengo, was given command of the army of Italy, and drove the Neapolitans from the papal states. In 1803 he was made governor of Paris.

Upon the establishment of the empire, Murat was made prince, marshal, and grand admiral of France. The campaign of 1805 found him in command of the cavalry, and as a reward for a series of successes, culminating at Austerlitz, he was in 1806 made grand duke of Berg. Later in the year he took up his old command, and fought with distinction at Jena, Hohenlinden, Eylau, and Friedland. In 1808 he was sent to Spain as lieutenant-general of the emperor, but after two months, upon Joseph Bonaparte becoming king of Spain, Murat was made king of Naples, under the name of Joachim Napoleon. The position was intolerable and led to serious differences with the emperor. The war with Russia, however, brought Murat to Napoleon's side, and he was given command of the cavalry in the campaign of 1812. When Napoleon hastened back to Paris, he left Murat in command of the retreating army.

Murat's fears for his throne were increased after the Leipzig campaign, and he hurried to Naples and entered into negotiations with Austria. Allying himself to that empire, he attacked the French in N. Italy, but on Napoleon's escape from Elba, he offered his services to his old master, and declared war on Austria. His army was routed, and he fled to Naples, and thence to Cannes, where he organized an expedition against the Bourbons who had been reinstated in Naples. With 200 men he landed in Calabria, at Pizzo, was taken prisoner, tried on the spot by court martial, and on Oct. 13, 1815, was shot in the courtyard of the castle. Thoroughly unreliable as a subordinate, Murat ranks among the great cavalry leaders. *Consult* Life, A. H. Atteridge, 1911.

**Muratori**, LODOVICO ANTONIO (1672-1750). Italian scholar. Born near Modena, Oct. 21, 1672, he became librarian at Milan, and in 1700 was appointed librarian and archivist to the duke of Modena. Nearly 50 volumes of Italian historical materials which he collected and edited are his imperishable monument; they include *Rerum Italicarum Scriptores*, 1723-51;

*Antiquitates Italicae Medii Aevi*, 1738-42; and *Annali d'Italia*, 1744-49, the second book of which contains the 2nd century canon of the N.T. books known as the Muratorian Fragment. The "father of Italian history" died at Modena, Jan. 23, 1750.



Murcia, Spain. Cathedral tower, completed in 1766, with, left, the 16th century Chapel de los Velez

**Murchison**. Geographical name in Western Australia. It is that of (1) A river which rises in the Carnarvon Range and flows S.W. to Gantheaume Bay. (2) A goldfield E. and S.E. of the Sanford, a left bank affluent of the Murchison. Cue, its capital, is connected by rly. with Geraldton. (3) A mt. of 1,705 ft., in the Scrubby Range, E. of the Middle Murchison. (4) A co. with a coastline at the S. end of Shark Bay, and the river Murchison as its E. boundary.

**Murchison**, SIR RODERICK IMPEY (1792-1871). British geologist. Born at Tarradale, Ross-shire, Feb. 19, 1792, he was educated at the military college at Great Marlow, and, entering the army, served in the Peninsula War. In 1826 he was elected F.R.S. and in 1828 he toured Auvergne and N. Italy with Sir Charles Lyell, and afterwards carried out geological tours in the U.K. and on the Continent. He reclassified the Palaeozoic rocks and in 1835 suggested the name Silurian for the system first noticed in Wales and later found to be world-wide. In 1838 he published his famous work *The Silurian System*. In 1855 he was appointed director-general of geological survey, and he was president of the Geographical Society many years. He was knighted in 1846, made K.C.B. in 1863, and a baronet in 1866. He died Oct. 22,

1871. *See* Silurian; *consult* Life, Sir A. Geikie, 1875.

**Murchison Falls**. Waterfall on the White Nile. It is 50 m. below Foweira, where the river drops in three cascades to Lake Albert.

**Murcia**. Maritime prov. of S.E. Spain. Between Alicante and Almeria, on the Mediterranean Sea, its area is 4,369 sq. m. It slopes from the mountains in the N.W. which rise in the Sierra de Espuña to an alt. of 5,150 ft., down to the sea. In the coast land to the E. is a large lagoon, called the Mar Menor. Well watered by the Segura and its tributaries, Murcia is fertile, especially in the Huerta de Murcia, where irrigation is practised. The climate is hot and dry; oranges, olives, vines, maize, and other cereals are grown, and mulberry trees cultivated for the rearing of silkworms. The chief towns are Murem, the capital, and Cartagena. The first Carthaginian possession in Spain, Murcia was occupied in turn by the Romans, the Moors, who made of it a kingdom, and the Spaniards. The old Moorish kingdom, 1223-43, corresponded chiefly with the modern provs. of Murem and Albacete. Pop. (1950) 756,721.

**Murcia** (Arab. Medinat Mursiya). City of Spain, capital of the prov. of Murem. It stands on the Segura river, 25 m. W. of the Mediterranean, and 50 m. by rly. N.N.W. of Cartagena. In the centre of the beautiful Huerta (garden) de Murcia, it is crowded in its older parts, but the new are well built, with fine streets, avenues, and squares. The cathedral, founded probably in 1388, has a Renaissance facade and a tower 480 ft. high. The bishop's palace is notable, and there is a Moorish granary, now a picture gallery. There is a large trade in fruit. An Iberian town and a Roman colony occupied the site, but the present city was founded by Abd-ur-Rahman II, caliph of Cordova, in 825, afterwards belonged to various Moorish states, and was taken by the Castilians, 1263. It was besieged by the French in 1810 and 1812, and has suffered from inundations and earthquake. Pop. (1950) 218,375.

**Murder**. In English law, the unlawful killing of any person under the queen's peace, with malice aforethought. A child is not "in being" until it has an existence separate from its mother so that to cause the death of an unborn child is not murder; but it may be the crime of child destruction under the Infant Life

(Preservation) Act, 1929. "Unlawful" killing means killing without legal justification, *i.e.* in circumstances that do not amount to justifiable or excusable homicide. "Malice aforethought" does not necessarily mean actual ill-will. It may be either express where there is the intention to kill someone or implied where without any intention to kill there is, *e.g.*, an intention to do grievous bodily harm. Formerly a mere push if by mischance it caused death was sufficient if it took place in the course of a felony involving violence—*e.g.* burglary, but "constructive" malice such as this was abolished by the Homicide Act, 1957.

Under that Act, murder, for which the punishment in England had formerly been death, became punishable not by death but by life imprisonment, except for a second or later murder done on a separate occasion and for "capital" murders—*i.e.* those (i) in the course of theft; (ii) by shooting or causing an explosion; (iii) in resisting or preventing arrest or escaping from custody; (iv) of a police officer carrying out his duty or of anyone assisting him; (v) by a prisoner of a prison officer carrying out his duty or of anyone assisting him.

**Murdoch, WILLIAM** (1754–1839). British inventor. Born at Bellow Mill, Ayrshire, Aug. 21, 1754, he became an assistant to James Watt, 1777, carrying out many of Watt's engineering schemes. In 1792 Murdoch turned his attention to the possibility of using coal-gas or the gases from the distillation of wood, peat, etc., for illumination. He erected an experimental plant in 1792 to light his house at Redruth, Cornwall; and six years later lit the Soho, Birmingham, factory of Boulton and Watt by gas, the first public use of the new illuminant. He also made several experimental steam-driven carriages. Murdoch died in Birmingham, Nov. 15, 1839. In England his name was often spelt Murdock.

**Mures.** See Maros.

**Murexide** OR ACID AMMONIUM PURPURATE. Substance which crystallises in prisms, showing a beautiful metallic green lustre. It was formerly used in dyeing, but has now been replaced by aniline colours. Murexide was formerly made in large quantities from guano, and can be made by acting on a solution of alloxan and alloxantin by means of ammonia. Also known as Roman purple, it was similar to the Tyrian purple of the

ancients. The latter dye was obtained from a genus of gastropods, *Murex*, hence the name.

**Murger, HENRI** (1822–61). French novelist. Born in Paris, March 24, 1822, he was of German



Henri Murger. French novelist, author of *Scènes de la Vie de Bohème*  
From a sketch by Gavarni

origin. In his youth he passed from one occupation to another, including journalism, until he became famous in 1848 with *Scènes de la Vie de Bohème*. This describes with rich humour and poignant pathos the literary and artistic underworld of Paris, in which much of Murger's life was spent. He contributed to the *Revue des Deux Mondes* and wrote other novels, including *Les Buteurs d'Eau* and *Le Sabot Rouge*, also poems and plays. *Vie de Bohème* was dramatised, 1849, by Murger in collaboration with Théodore Barrière (1823–77), and was the basis of Puccini's opera *La Bohème*. Murger died Jan. 28, 1861.

**Murghab.** River of Central Asia. It rises in Afghanistan, enters Russian territory (Turkmen S.S.R.), and, after flowing through the oases of Penjdeh and Merv, loses itself in the sandy desert of Kara-Kum. Its length is about 400 m. It is crossed by a branch of the Central Asiatic rly.

**Muridae.** Zoological name for the mouse family of the order of rodents. It includes rats, mice, voles, hamsters, lemmings, and certain others. They are distributed all over the world, and most have naked, scaly tails. Most live on land, though a few are aquatic in habit. See Hamster; Lemming; Mouse; Rat; Rodent; Vole.

**Murillo, BARTOLOMÉ ESTEBAN** (1617–82). Spanish painter. Born at Seville, probably Dec. 31, 1617, he was related to the painter Juan del Castillo, to whose care and instruction he was committed. On Castillo's removal to Cadiz, Murillo

was compelled to join the street artists who hawked their wares in Seville. In 1642 he obtained money by selling coarsely executed but popular subjects to the merchants who exported these goods to Spanish America, and took the road to Madrid, where he was kindly received by Velazquez.

Having returned to Seville, Murillo was commissioned by the friars of the Franciscan convent to paint a series of 11 pictures for their cloister, and began this work in 1646. The payment was beggarly, but the paintings brought fame and commissions. In 1648 he married a rich and noble wife, Doña Beatriz de Cabrera y Sotomayor. In 1654, on the death of Pacheco, he was acknowledged head of the Sevillian school. A series of paintings esteemed among his most celebrated works was begun in 1671

for the church of the Hospital of La Caridad; and three years later he began a famous series for the Franciscan convent outside Seville. These included the Charity

of S. Thomas of Villanueva, which he was wont to speak of as "his picture." He died at Seville, April 3, 1682.

Murillo excelled in genre, and his realistic scenes from low life are preferred by many to his religious pictures, which are sometimes spoilt by false sentiment and lack of dignity. In the sack of Seville, Marshal Soult carried off a number of Murillo's works, several of which remain in France. There are examples in the London National Gallery, the Dulwich Gallery, and the Wallace Collection. See illus. Andrew; Annunciation; Dice.

**Murmansk.** Arctic seaport of the R.S.F.S.R., chief town of a region of the same name. On the Kola inlet of the Murman coast, it owes its development to the Murman rly., which links it directly with Leningrad. Projected in 1895, this line was started 1915 from Murmansk southward and Zoanka northward, and completed 1917. Murmansk harbour is ice-free throughout the year; the town has a fishing industry and a trade in fish products. Pop. 117,054.

It was the base for Allied troops operating against the Bolsheviks in 1918–19 (see Murmansk Ex-



Murillo, Spanish painter  
Self-portrait in Earl Spencer's Collection



pedition), and was later developed by the Russians as the principal base for their Arctic fleet. During the Russo-Finnish war of 1939-40 it was the base for the Soviet attack on the Finnish nickel port of Petsamo. On Dec. 29, 1939, the rly. was cut by Finnish commandos. After the peace treaty Finland was obliged to assist in constructing a rly. through Markajarvi to link up with the Leningrad-Murmansk line at Kandalaksha on the White Sea. When Finland joined Germany in the war against Russia, Murmansk became an important objective of the Nazis, who on July 1, 1941, launched a heavy air and land attack against the port and occupied the outskirts. They were driven out by a Soviet counter-attack, and on Sept. 23 suffered heavy losses in another attempt to capture the port. Soviet naval forces based on Murmansk constantly attacked supply ships and transports attempting to maintain the German army. Murmansk was a terminal port for convoys bringing munitions from Great Britain and the U.S.A. From this base Soviet forces advanced into N. Finland and took Petsamo from the Germans on Oct. 15, 1944.

**Murmansk Expedition.** Allied enterprise arising out of the First Great War. In 1918 this region was menaced by Finland, then a vassal of Germany. She had already bargained with the Bolsheviks of Russia for a considerable enlargement of territory.

In Feb.-March, 1918, the British effected a naval landing at Murmansk, and at Pechenga (Petsamo), 100 m. farther W. and close to the Finnish frontier. In June British, French, and U.S. troops occupied the port and adjacent country. The Murman regional soviet at the outset not only offered no opposition, but co-operated with the Allies for the defence of the rly. and territory. On their side, the Allies agreed to recognize the local soviet as the supreme authority, and undertook not to interfere politically. An agreement with the local soviet was ratified July 7, but two weeks later the central Bolshevik govt. countermanded the agreement. In Sept. the Allies pushed down the Murmansk rly., Kandalaksha becoming their base in Oct., and from that centre, in cooperation with the Karelians, they cleared N. Karelia of Bolsheviks and "White" Finns; later in the same month, having advanced S., and occupied Kem, they dislodged the enemy

from the rest of Karelia. By the end of Jan., 1919, the Allies had advanced along the rly. S.W. of the White Sea, and early in March occupied Segeja, about 360 m. S. of Murmansk. The advance continued, the Allies reaching Lake Onega, over 400 m. S. of Murmansk. But already in March the British government had decided to evacuate Murmansk and Archangel, and withdrawals began in June. A Bolshevik offensive up the rly. followed. Archangel was evacuated on Sept. 27, and the last British troops left Murmansk Oct. 12, 1919.

**Murner, THOMAS (1475-1537).** German satirist. He was born at Oberehnheim, Alsace, Dec. 24, 1475, became a Franciscan monk, and afterwards wandered from one university to another. His satire, of the most virulent kind, whether spoken or written, was chiefly directed against the upholders of the Reformation, although he wrote much himself of the need for reform within the Church.

**Murom.** Town of Vladimir region, R.S.F.S.R. It is 75 m. S.E. of Vladimir town, on the Oka, and has shipbuilding yards and locomotive, linen, and food canning factories. It was an important commercial centre by the 10th century. Pop. (est.) 23,000.

**Murphy, WILLIAM PARRY (b. 1892).** An American pathologist. Born at Salem, Oregon, in 1892, he graduated from Harvard university medical school in 1915, and after a number of hospital appointments became instructor in medicine at Harvard University in 1928. It was there that, in 1926, he, together with Minot and Whipple, had discovered the liver treatment method for pernicious anaemia, for which the three of them shared the Nobel prize for medicine in 1934. Murphy was awarded the Moxon medal of the Royal College of Physicians in 1933. He published a text book of his treatment, *Anaemia in Practice*, in 1939.

**Murray.** Principal river of Australia. It rises in the Australian Alps, and flows N.W. along the borders of N.S.W. and Victoria, and in S. Australia passes through the shallow Lake Alexandrina to the Southern Ocean at Encounter Bay. It has a total length of about 1,609 m. and with its tribs. drains 414,253 sq. m. Its affluents include the Murrumbidgee, with the Lachlan, and the Darling (the main trib.). Important for its fisheries, it is navigable in a great part of its extent, but as a waterway the shallowness of its mouth prevents large ships

entering, though it has rly. connections at various points on its course. Half-a-mile below the inflow of the Mitta-Mitta is the Hume reservoir, one of the largest in the world. The Murray irrigates one of the chief fruit-growing areas of Australia. See Australia in N.V.

**Murray, SIR DAVID (1849-1933).** Scottish painter. Born at Glasgow, Jan. 29, 1849, he painted landscapes extensively throughout Europe. He was elected R.A., 1905, and his brilliantly coloured scenes of English, Scottish, and continental landscapes became popular. He was president of the R.W.S. in 1917, and knighted the following year. He died Nov. 14, 1933.

**Murray, DAVID LESLIE (b. 1888).** British novelist and journalist. Educated at Harrow and



D. L. Murray,  
British novelist

Balliol, Oxford, he was a member of the editorial staff of *The Times*, 1920-44, edited *The Times Literary Supplement*, 1938-44, and as dramatic critic contributed regularly to *The Nation* and *Athenaeum*, 1920-23. His novels included *The Bride Adorned*, 1929; *Stardust*, 1931; *Regency*, 1936; *Tale of Three Cities*, 1940; *Enter Three Witches*, 1942; *Folly Bridge*, 1945; *Royal Academy*, 1950; *Outrageous Fortune*, 1952.

**Murray, (GEORGE) GILBERT AIMÉ (1866-1957).** British scholar. He was born in Sydney, N.S.W., Jan. 2, 1866, and, leaving Australia in 1877, was educated at Merchant Taylors' and St. John's College, Oxford. Professor of Greek at Glasgow University, 1889-99, and Oxford University, 1908-36, he was a trustee of the British Museum 1914-48; president of the international committee of intellectual cooperation 1928-40; chairman of the League of Nations union 1923-38, and subsequently co-president of that body and its successor the United Nations association until his death.

A brilliant Greek scholar, he made English verse translations recognized as among the best ever made



Gilbert Murray, O.M.,  
British scholar

of, *e.g.*, *Electra*, *Medea*, *Iphigenia in Taurus*, *Bacchae*, and *Trojan Women* of Euripides; *Oedipus Rex*, 1910, and *Antigone*, 1939, of Sophocles; *Agamemnon*, 1920, *Suppliant Woman*, 1930, *Persians*, 1939, of Aeschylus; *Frogs*, 1902, *Birds*, 1949, *Knights*, 1955, of Aristophanes. His numerous works on Greek literature included *History of Ancient Greek Literature*, 1897; *Five Stages of Greek Religion*, 1913, 1925, 1951; *Aristophanes*, 1933; *Aeschylus*, 1940. He also wrote on problems of the twentieth century. He was awarded the O.M. in 1941; and died at Boar's Hill, Oxon, May 20, 1957.

**Murray, Sir James Augustus Henry** (1837–1915). British lexicographer. Born at Denholm, Rox-



Sir James Murray,  
British lexicographer

burghshire, he was educated at Edinburgh. During 1870–85 he was a master at Mill Hill School, where he conceived the idea of a new English dictionary. Murray undertook the preparation of a dictionary on historical principles, based mainly on the materials collected by the Philological Society. The first volume was published in 1888. The work had been begun at Mill Hill, but from 1885 was carried on at Oxford, where the Clarendon Press undertook its publication. He was knighted in 1908, and died at Oxford, July 26, 1915. The dictionary was completed 1928. *Consult* *Memoir*. H. Bradley, 1919.

**Murray, John**. Name of a firm of British publishers. It was established at 32, Fleet Street, London, in 1768, by John Mac Murray (1745–93), a retired lieutenant of the Royal Marines, who, acquiring a bookselling business, dropped the Scottish prefix Mac. He issued the first two vols. of D'Israeli's *Curiosities of Literature*. His son, John Murray II (1778–1843), was London agent of Constable, had a share in Scott's *Marmion*, started *The Quarterly Review* in 1809, transferred the business in 1812 to 50 and 50a, Albemarle Street, and published for Byron, Borrow, Crabbe, Jane



John Murray I,  
British publisher

Austen, and many others. The business was carried on by John Murray III (1808–92), John Murray IV (1851–1928, K.C.V.O., 1926), and John Murray (b. 1884), made K.C.V.O. in 1932.

**Murray, Sir John** (1841–1914). British biologist. Born at Coburg, Ontario, March 3, 1841, he went to Scotland in 1858, and completed his education at Edinburgh University. Murray was chief naturalist to the Challenger Expedition, 1872–76, and editor of its scientific reports. He was the author of a number of books and memoirs on marine biology, oceanography, and limnology. He was knighted 1898, and died March 16, 1914.

**Murray, Lindley** (1745–1826). British grammarian. Born in Pennsylvania, April 22, 1745, he was a successful barrister, and, having amassed a fortune during the revolutionary war, he came to England and settled at Holgate, near York. His English grammar had a large sale throughout Great Britain and the U.S.A. He died Jan. 16, 1826.



Lindley Murray  
British grammarian

**Murrayfield**. Scottish Rugby Union football ground, situated outside Edinburgh, opened 1925. Scotland's home international matches are usually played here.

**Mürren**. Pleasure resort of Switzerland, in the Bernese Oberland. It is perched on a mountain terrace below the Jungfrau, the Breithorn, the Blümlis Alp, and the Schilthorn, 3 m. by cable rly. and electric tramway S. of Lauterbrunnen. Alt. 5,385 ft.

**Murrey** OR SANGUINE (old Fr. *moré*, mulberry-coloured). In heraldry, deep blood red colour. It is represented in drawing by diagonal lines crossing each other.

**Murrumbidgee**. River of New South Wales. It rises in the Australian Alps, flows N. in its upper course through the Federal Territory to the artificial lake caused by the Burrinjuck dam, thence almost due W. to its junction with the Lachlan, and, later, S.W. to the Murray. Of its total course of 1,050 m., 500 m. are navigable.

**Murry, John Middleton** (1889–1957). British journalist. Born in London, Aug. 6, 1889, he was educated at Christ's Hospital, and Brasenose College, Oxford. On the editorial staff of the *Westminster Gazette*, 1912–13, he

reviewed books for *The Times Literary Supplement*, 1914–18, edited *The Athenaeum*, 1919–21, and *The Adelphi*, 1923–30. An ardent pacifist, he

edited *Peace News*, 1940–46. As a literary critic he had a lively style. His many volumes of criticism, philosophy, and politics included *Countries of the Mind*, 1922, 2nd series 1931; *Keats and Shakespeare*, 1925; *Son of Woman* (a study of D. H. Lawrence), 1931; *Blake*, 1933; *The Necessity of Pacifism*, 1937; *Jonathan Swift*, 1954. He died at Bury St. Edmunds, March 13, 1957. Katherine Mansfield (*q.v.*) was the first of his three wives.



John Middleton  
Murry,  
British journalist

**Murshidabad**. Dist. and town of W. Bengal, India, in the Presidency div. The dist. is in the N. part of the Ganges delta, where the main channels of the river, the Bhagirathi and Padma, no longer flood and add silt to the alluvial plain. Silk manufacture is the chief industry. Berhampur is the h.q. Area 2,063 sq. m. Pop. (1951) 1,715,759.

The town, on the Bhagirathi, was founded in 1704 by the nawab Murshid Kali Khan as the capital of Bengal; it declined after Calcutta became the capital, and most of the old buildings are in ruins.

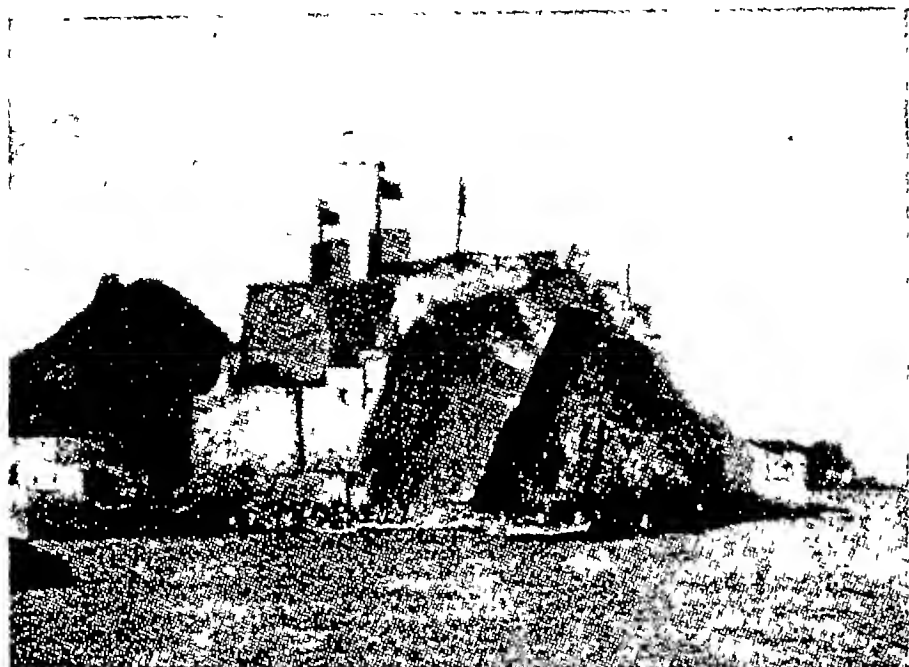
**Murshilish, Mursilis, or Mursil**. Name of two notable kings of the Hittite empire. The first reigned c. 1620–1590 B.C.; capturing Aleppo and Carchemish, he advanced down the r. Euphrates to Babylon, overthrowing the first Babylonian dynasty. Murshilish II, c. 1345–1315, the son of Shubbiliuma, was also a warrior king: detailed annals of his campaigns have been in part preserved. He extended the boundaries of the Hittite kingdom to the W., consolidated his father's conquests in Syria, and fought continual defensive wars against threatening hill tribes to the N.E.

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**Murut**. Primitive people of Indonesian stock in Sarawak and N. Borneo, estimated as numbering 250,000. Shortish and wavy-haired, they are coarser, longer-headed, lankier, ruddier, and less Mongolised than other Bornean peoples. Their customs betoken Philippine contact before the Kayan immigration. *See* Dusun.



**Murzuk** OR MOURZOUK. Chief town in Fezzan, Libya, and an important oasis. The city, founded in 1310, was formerly the capital of the Turkish administration of Fezzan. It owes its importance to its position on the chief caravan route from Tripoli to the W. Sudan. Murzuk was the objective of a raid by the Long Range Desert Group



Muscat, S.E. Arabia. The old fort built by the Portuguese during their occupation of the city

and Free French forces in Jan. 1941, and was captured by Lelerc's forces from the S. in March.

**Musaceae.** Family of monocotyledonous plants, of which the banana is a well-known member. See Banana; Manila Hemp; Plantain; Scitamineae.

**Musaeus.** Greek poet generally known as the Grammarian. He is supposed to have lived about the 6th century A.D., and was the author of a well-known little epic, *Hero and Leander*. There have been many imitations of this charming poem, notably that of Marlowe, completed and published by Chapman, the translator of Homer.

**Musa Ibn Nosair** (640-716). Arabian soldier and administrator. Born at Mecca, he was employed by the Caliph Walid I to complete the conquest of N. Africa, and by 709 had extended the Arabian empire as far as Morocco. He sent to Spain his lieutenant Tarik, who in 711 secured mastery over a great part of the Iberian peninsula. Tarik was joined in 712 by Musa, who overthrew Roderick, the Gothic king of Spain, but was recalled by Walid 714, having been accused of corruption by Tarik. Deprived of his command and sentenced to a heavy fine, he died on his way to Mecca.

**Muscae Volitantes.** Term applied to little black specks, something like flies, which many people see floating before their eyes. They are the shadows of minute bodies in the vitreous humour. They sometimes give rise to alarm, but

do not as a rule indicate any disease or disorder, although often associated with indigestion, and if disregarded will soon cease to be observed. In one form, however, they may be symptoms of serious disease of the eye.

**Muscarine.** Poisonous alkaloid found in fly agaric (*Amanita muscaria*), and the fungus *A. pantherina*. It has been prepared artificially by the oxidation of choline with nitric acid. The name is also applied to blue aniline dye.

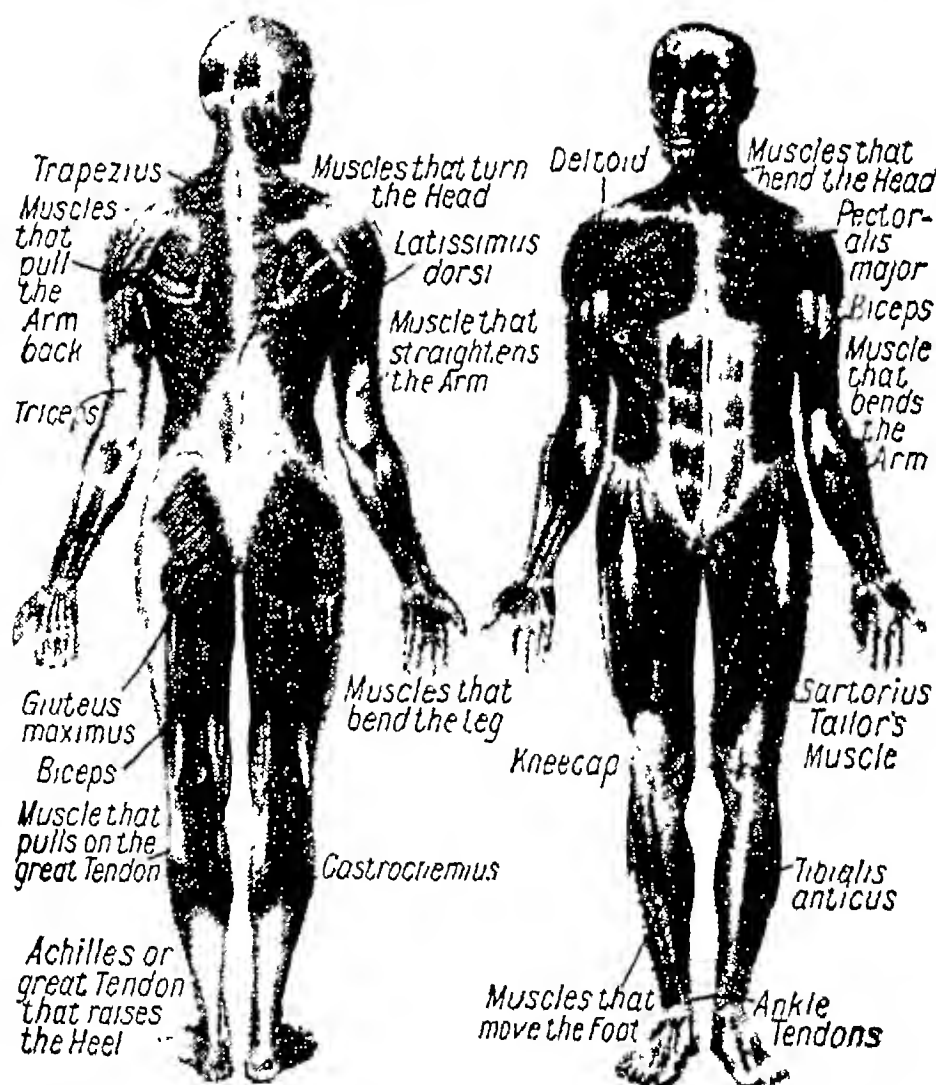
**Muscat,** MOSKAT, OR MASKAT. Capital and port of Muscat and Oman, S.E. Arabia, on the S. shore of the Gulf of Oman. Among its exports are pearls, dates, and horses; its imports include rice, coffee, sugar, silks, and cotton goods, but much of its trade has been lost to Matrah. Muscat is the residence of a British political

**Muscatel** OR MUSCADEL (Ital. *moscado*). Generic term for wine derived from the parent vine of the same name. A highly alcoholised, sweet, rich wine, either white or red, it is distinguished by a strong musk flavour. Muscatel wine is made in S.W. France, N. Spain, Italy, Sicily, Capri, Corfu, Crete, Cyprus, the Canaries, the Cape, Switzerland, and elsewhere. Of the French, the white Rivesaltes and the red Banyuls are fine wines; of the Italian, *Lacrima Christi* (q.v.) is the most favoured.

**Muschelkalk** (Ger., shell lime). In geology, middle subdivision of the Triassic system of rocks. Typically developed in Germany and many parts of the Continent, they are chiefly limestones rich in the remains of mollusca. The formation is an important source of salt, marls, and gypsum. Rocks of this group do not occur in Gt. Britain.

**Muscle.** Tissue possessing power of contraction by which, in the higher animals, movements are performed. Muscles are divided into two main classes: voluntary (or striped) muscles, the action of which is under the control of the will; and involuntary (or unstriped) muscles.

Voluntary muscles are attached to the bones and are sometimes called skeletal. They consist of masses of fibres, each fibre being about 1 in. in length and 1/500th in. in diameter. Under the microscope the fibres are seen to be marked by alternate dark and light markings (the "stripes,") and this form of muscle is in consequence sometimes termed "transversely striated" muscle. Each fibre is



agent and consul. It was occupied by the Portuguese from 1508 to the middle of the 17th century, becoming the capital of an independent state again under a native sultan in 1741. To support the sultan of Oman, British troops were in Muscat in 1915, and took part in defeating the disaffected tribesmen, but these operations had nothing to do with the First Great War. Pop. 4,200. See Oman.

Striped Muscle



Muscle. Top, diagrams showing back and front views of the distribution of the principal muscles of the body and their mode of action. Below, magnified portion of muscle fibre showing nerve ending

surrounded by a sheath, called the sarcolemma, inside which is soft tissue possessing the power of contraction. When a muscle is stimulated by a nerve and contracts, the fibres become shorter and thicker. In some animals and fishes certain of the muscles are red, this being due to the presence of haemoglobin in their contractile substance.

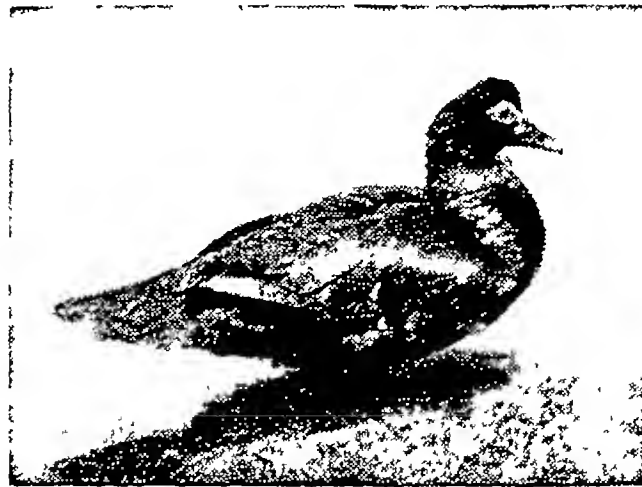
Involuntary muscles are under the control of a different part of the nervous system, and cannot be made to contract by an effort of the will. This type of muscle forms the muscular tissue of the heart, and is also found in the walls of the oesophagus, stomach, intestines, uterus, bladder, blood-vessels, and other organs. The involuntary muscle of the heart is striated, but the involuntary muscle in other parts does not exhibit striations, and is termed "plain" muscle. It is composed of elongated cells about 1/600th of an in. long, each with an oval nucleus and covered with a delicate sheath. See Anatomy; Biceps; Face; Jaw; etc.

**Muscle Shoals.** Rapids of the Tennessee river in Alabama, U.S.A. They form a 37-m. stretch 260 m. above the confluence of the Tennessee with the Ohio. Until the First Great War the 134-ft. vertical fall, with rapids and pools, acted as a barrier to navigation. In 1916 Wilson authorised construction of two dams and two hydro-electric plants to provide power for making nitrates. Wilson Dam, at Florence, completed 1925, is 4,300 ft. long and has two locks, each 300 ft. by 60 ft. It raised the river's discharge from 5,000 to 500,000 cu. ft., and generates 260,000 h.p. Construction of Pickwick Landing and Wheeler Dams by the T.V.A. helped to provide a 9-ft. channel. In 1933 Wilson Dam became a T.V.A. installation.

**Muscovite.** Common member of the mica group of minerals. It consists essentially of potassium aluminium silicate with water and often some fluorine; traces of caesium and rubidium may be present. The mineral occurs as white flakes, sometimes showing hexagonal crystal form. It possesses a remarkable basal cleavage, which allows it to be split into thin flakes, flexible, elastic, transparent, and with low electrical and thermal conductivity. Muscovite is widespread in granitic and metamorphic rocks; commercial deposits are generally found in pegmatites with flakes up to 12 ft. across. Famous deposits are in Bihar, India. Muscovite is used in electrical products. See Mica.

**Muscovy.** Old name for Russia. Derived from Moscow, it means the district around that city, and was generally used for Russia until well into the 18th century.

**Muscovy Duck** (*Cairina moschata*). Species of duck, occur-



Muscovy Duck. Tree-nesting duck, found naturally in Central and South America

ring naturally in Central and S. America, but largely introduced elsewhere as an ornamental bird for lakes and parks. The birds live in the forest swamps, where they nest in the trees, and their food is almost entirely vegetable. The colour of the plumage is glossy purplish green on the upper parts, with brownish black crested head, neck, and under parts. The male is much larger than the female.

**Musculo-Spiral Nerve.** One of the main nerves of the arm. It arises from the brachial plexus on the outer side of the armpit, winds round behind the humerus, and passes down to terminate in front of the external condyle of the humerus by dividing into the radial and posterior interosseous nerves. It supplies the triceps and other muscles at the back of the arm, and is also the nerve of sensation to the back of the arm and a considerable area of the forearm. Paralysis of the musculo-spiral nerve produces dropped wrist.

**Muselier, ÉMILE HENRI** (b. 1882). French sailor. Born at Marseilles, April 17, 1882, he went to the naval school at Brest, then served with marines and naval gunners before commanding a Q-boat in the First Great War. He was in charge of naval and coastal defences at Marseilles, 1938-39, went to Gibraltar in June, 1940, and later joined Gen. de Gaulle in England, being appointed commander of Free French naval forces and a member of the council of defence. He landed on the islands of S. Pierre and Miquelon, off Newfoundland, in Dec., 1941, and dismissed the Vichy governor, the inhabitants declaring for De Gaulle. The officer who chose the cross of Lorraine as symbol of Free France, Muselier was obliged to

resign in 1942 owing to ill-health. Pron. Mew-zell-yay.

**Muses** OR MUSAE. In Greek mythology, the divinities who presided over the liberal arts. They were supposed to be daughters of Zeus, nymphs born in Pieria, at the foot of Mt. Olympus; hence they were sometimes called Pierides. Mt. Helicon in Boeotia and Mt. Parnassus on Phocis were also associated with them. Companions of Apollo, they sang to his lyre.

The muses were at first three in number, and nine in later legend. Their names are: Clio, the muse of history, represented sitting with an open scroll; Euterpe, of lyric poetry, with a flute; Thalia, of comedy and pastoral poetry, with a comic mask and a shepherd's staff; Melpomenē, of tragedy, with a tragic mask, the club of Hercules or a sword, and the cothurnus; Terpsichorē, of dancing, with lyre and plectrum; Erato, of love songs, with the lyre; Polyhymnia, of sacred song, of pensive appearance; Urania, of astronomy, with a staff, pointing to a globe; Calliopē, of epic poetry, with tablet and stylus. The Roman nymphs Camenae or Casmēnae were also identified with the muses.

**Musette.** (1) Musical instrument of the bagpipe class, popular in France in the 17th and 18th centuries. (2) A small hautboy, whose tone resembles that of the melody pipe of the one mentioned above. (3) A pastoral dance in duple or triple time. The suites of the 18th century contain musette airs, alternating with gavottes.

**Museum** (Gr. *mouseion*, the seat of the muses). Repository for the preservation and exhibition of objects of natural history, antiquity, science, and art, also applied to the collection itself.

Museums are comparatively modern institutions, few going back to the 18th century. In classical times museums in the modern sense were unknown, that of Alexandria, founded about 280 B.C., being a university building, although it probably contained collections of all kinds. The extensive collection of objects of art and curiosities is not recorded till after the Renaissance. These early collections were known as cabinets of rare and curious objects, cabinets of medals, etc. Probably the earliest was the collection of natural history objects made by Georg Agricola.

The oldest surviving museum established on a sound basis is the Ashmolean (q.v.) at Oxford. Bacon



in his *New Atlantis* elaborated the idea of a great national museum of science and art. The first great typical collection was the British Museum, founded in 1753. Early museums formed by private individuals were Sir Hans Sloane's museum, now the British Museum; Sir Ashton Lever's, of the late 18th century, probably the largest formed by a single person, afterwards owned by James Parkinson, and finally dispersed by auction in 1806. A number of museums, especially some of the larger and more important, were derived originally from collections formed by princes, nobles, etc.

There are numerous varieties of museums. A very broad difference lies in the bodies maintaining them, and they can be classified as national museums, which are maintained by the state and situated usually in the capital; provincial or municipal museums, maintained out of the rates; museums of a semi-public nature, maintained by universities, societies, and schools; and lastly private museums, maintained by private individuals, and sometimes open to the public, as the King John's House Museum, Rushmore, or the Wellcome Historical Medical Museum, London. Private museums usually tend to become public museums. The sacristies of some foreign cathedrals are often opened as museums, and contain ecclesiastical objects, and sometimes other specimens.

#### Art and Science Collections

Museums may also be classified according to the contents and the ideas underlying their arrangement. They are generally differentiated into art and science museums; examples of the varieties are comparative anatomy (Royal College of Surgeons), botany (Kew), geology (London and Berlin), eastern religions (Guimet, Paris), furniture (Geffrye Museum, London), history of London (London and Guildhall Museums), the evolution of man-made objects (Pitt-Rivers, Oxford), folklore (Musée de Folklore, Antwerp), folk or open-air museums (Skansen, Stockholm), war museums, museums of archaeology, shipping, whaling, etc.

A very distinct type of museum is that which illustrates and commemorates the life and work of a person, the museum building being usually the house of, or intimately connected with, the person commemorated. Examples include the Shakespeare museum (Stratford-on-Avon), and Dickens

(Portsmouth), Borrow (Norwich), Wm. Wilberforce (Hull), Dürer (Nuremberg), Beethoven (Bonn), Michelangelo (Florence), etc.

The main functions of a museum are the collection and preservation of specimens and data, which help to widen knowledge by the investigations of experts, and the education and instruction of visitors and students by its exhibits and the method of display. Some museums now have a special portion set aside for children; the U.S.A. first introduced special children's museums. A local museum should mainly deal with the history, natural history, archaeology, etc., of the locality.

By the Sunday Entertainments Act, 1932, museums in England may be open on Sunday in spite of the Sunday Observance Acts, even where there is a charge made for admission.

#### Open-Air Museums

Most museums arrange their exhibits to illustrate particular branches of knowledge, *e.g.* to show the types of British sea-birds, the ceramic art of China, the evolution of musical instruments, and the distribution of the various types, etc. A form of exhibit common on the continent of Europe is the reconstruction of interiors of rooms, to show the different types of building, architecture, furniture, and modes of living at different periods and in various districts. Particularly noteworthy of this kind were the museums at Zürich, Munich, Amsterdam, Stockholm, Oslo and other centres. An improvement in this direction is the idea first started by Dr. A. Hazelius, at Stockholm, of an open-air museum, later part of the Northern Museum, and known as Skansen. In this way national or local life and history is exhibited in the most attractive manner, with whole buildings preserved and suitably fitted up and furnished, as well as other out-of-door objects, with also exhibitions of folk dances, games, and other pastimes of former days. This type of museum arrangement is common in Scandinavia.

The threat of bomb damage necessitated the removal of most of the exhibits from London's museums during the Second Great War; only such as were too large for easy removal were left in place, protected by blast walls and sandbags. Nevertheless, the London museum contrived a special exhibition for the 1900th anniversary of the city's foundation. For

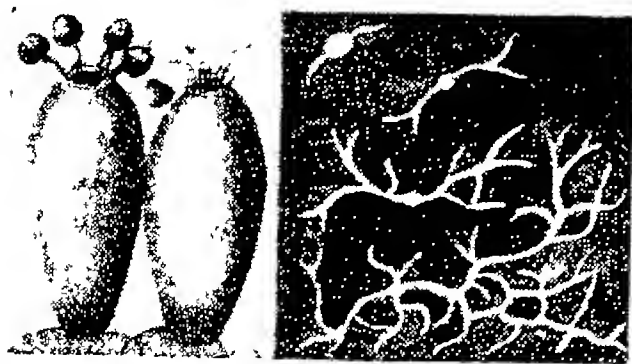
the rest, the treasures were dispersed in safe places all over the country. Most of the paintings from the National Gallery were stored in a quarry near Blaenau-Ffestiniog, in Wales. Exhibits from the British and Victoria and Albert museums went to Corsham quarries, near Bath; from the Tower of London and the Wallace Collection, to Hall Barn, Bucks, and to West Wickham park; while other valuable national possessions were kept at Mentmore and other country estates, and in the disused part of the Holborn-Aldwych tube rly. Continental museums, less exposed to material damage, were ruthlessly plundered by the occupying Nazis, and German collections, public and private, were enriched by treasures from the Louvre, from Brussels, Amsterdam, Florence, and Copenhagen. With the development of the Allied air attacks, most of these were stored in mines, together with the exhibits from the German museums and art galleries; and this precaution has preserved for mankind treasures of incalculable value, for the greater part of the fabrics of the museums of Berlin, Dresden, Munich, Cologne, etc., were totally destroyed. Consult *Museums, their History and Use*, D. Murray, 3 vols., 1904.

**Musgu Country.** Former dist. of Central Africa, bordering on Bornu and Baghirmi. It occupied a portion of the basin of Lake Chad between the Logone and Shari rivers. The Musgu people are fishers and tillers of the ground. See Africa.

**Mush, Mus, or Moush.** Town and vilayet of Turkish Armenia. Situated near the Murad Su branch of the Euphrates, it is about 80 m. S. of Erzerum, or 40 m. W. of Lake Van. Before the First Great War it was the natural centre of the trade of a wide district, and contained several mosques and churches. It was the seat of a R.C. and of a Gregorian bishop. Largely peopled by Armenians, it was surrounded by a number of prosperous Armenian villages. In July, 1915, the Turks, having massacred the Armenians in the neighbourhood, took Mush after heavy fighting in the streets. Much of the town was reduced to ruins, and the surviving Armenians were slaughtered or deported. The Russians drove the Turks out of it on Feb. 19, 1916, but had to evacuate it temporarily in Aug., 1916, and abandoned it in the winter of 1917-18. Pop. (1955) vilayet, 136,248.

**Mushki** OR MUSKI. Ancient people of Aryan relationship in Asia Minor. The Moschi or Phrygians of Greek writers, they inhabited Mushku, the Biblical Meshech (Ezek. 32). Entering Asia Minor perhaps as early as 1200 B.C. when the Hittite empire fell, they held central Anatolia against repeated Assyrian attacks. King Sargon in 709 defeated their king, Mita, a name perpetuated in the Midas of later Phrygian history.

**Mushroom** (*Psalliota campestris*). Purple-spored fungus of the family Agaricaceae. A native of



Mushroom. Spores developing and the threads that spring from them

Britain and the temperate portions of Europe, it occurs profusely in pastures where horses have grazed, their manure affording the most favourable pabulum for the plant. What is known as the mushroom is only the spore-bearing organ or fruit of the fungus, the vegetative portion living in the ground as a ramification of white cottony filaments (*mycelium*), thriving as a saprophyte upon organic waste. At certain points upon the mycelium swellings are produced, which develop into small sporophores completely enclosed in a membrane (*volva*).

The old idea that mushrooms are formed in a night is fallacious, for the process may take many months. Under favourable conditions of warmth and moisture a rapid expansion of the cell structure takes place, similar to that which occurs when a dry bath sponge is dipped into water. The sporophore bursts through the earth, ruptures the volva, and the upper part (cap or *pileus*) expands in umbrella form. Under the cap thin plates set edgewise radiate from the stalk, and on these the microscopical spores are produced in sets of four, aggregating millions. The commoner horse-mushroom (*P. arvensis*) agrees with *P. campestris* in most points, but is considerably larger and more strongly flavoured than is the latter variety.

The cap of the common mushroom is white and silky, at first hemispheric, and later flat, from 3 to 5 ins. across. The plates or gills,

which are at first salmon-pink, become dark amber as the spores ripen. It appears in nature from May to December, but, cultivated in specially prepared beds, where the proper temperature and humidity are maintained, it may be obtained at all seasons. For this purpose caves, cellars, railway arches, and disused tunnels have been used; more commonly they are grown in special houses, or in covered beds outside. These are prepared from fresh stable manure, turned and loosened daily until the fiercest heat of fermentation has escaped; then it is packed firmly to a depth of about a foot on a firm dry base, and boards on edge are firmly fixed along each side to prevent loss of heat and moisture.

When the temperature has dropped to 80° or so, the bed may be impregnated by pressing in pieces of an old mushroom-bed or of so-called mushroom-spawn. These bricks are permeated by the mycelium in a dry and therefore resting condition; they should be broken into pieces about

1 in. square, and dotted all over the bed about 4 ins. apart. The bed should then be evenly coated with finely sifted loam to a depth of an inch, and beaten firm. A covering of litter will help to retain moisture and an equable temperature, which ought not to fall much below 50°. Slight waterings will be necessary to maintain moisture, but only tepid water should be used.

When the mushrooms appear they should be gathered in the unexpanded or "button" stage, as the flesh is quickly attacked by the larvae of flies, which render them unwholesome. Poisoning by eating mushrooms is due either to these being in a decaying condition, or to the appearance in the bed of definitely poisonous species, the spores of which were introduced with the manure. Numerous allied species of fungi are equally good as food, but cannot be grown artificially with the same certainty. See Agaric; Blewits; Fungus; Hedgehog Mushroom. Consult Edible Fungi, J. Ramsbottom, 1948.

## MUSIC: ART OF ORGANIZED SOUND

Gerald Abraham, Professor of Music, Liverpool Univ.

*This survey of the history and development of a great art is supplemented by articles on individual composers, e.g. Bach, Beethoven, Handel, Mozart, and on Orchestra; Opera; Symphony, etc., as well as on the various musical instruments. See also Harmony; Singing*

Music is the art of organized sound. At what stage in his evolution man began to organize the vocal cries of emotionalised, heightened speech—if indeed such cries did not actually precede articulate speech—and the percussive noises he could make by banging together sticks or stones; at what stage he began to augment these sounds by blowing into reeds or setting a stretched cord in vibration by plucking it or scraping it: all this remains unknown. It lies far back in pre-history and we can only guess at its processes by study of the music of surviving primitive peoples such as the Australian aborigines.

From the dawn of history proper we find man in possession of an art of music, already with symbolic associations attached to groups of sounds (military, ritual, emotional). With the heyday of their civilization, the Greeks had evolved a subtle and complicated system of music, on the theories of which we are fully informed, although, ironically, we know extraordinarily little about how it actually sounded. Nor do we know how, if

at all, it was related to the music of the other Mediterranean peoples of the same period. We can only surmise with some confidence that a few centuries later the music of the early Christian Church drew upon both Hebrew and Greek sources. That early Christian music itself developed several species of chant: the Byzantine of the Eastern Church; the Ambrosian and its less florid offspring, the Gregorian, of the Western; the Mozarabic of Moorish Spain.

The great turning point in musical history occurred when, about the 8th or 9th century A.D., European music began to make use of different sounds simultaneously. From that point onward, while the musics of the Eastern peoples generally developed through (presumably) ever-increasing subtlety of melody and rhythm, Occidental music began to be a polyphonic or harmonic art, and its history is the record of successive attempts to construct polyphonic or harmonic edifices of sound in terms of the prevailing social conditions and



requirements and the resources available for performance. Each attempt reached a peak of technical perfection and produced masterpieces in that particular style; each ended by exhausting the possibilities of its technique and obliging musicians to devise a new one. Thus, broadly speaking, we have periods of pure style in which great masterpieces are most likely to appear, and transitional periods in which the débris of the old technique is mingled with experiments toward the new. Needless to say, this neat pattern is frequently interrupted by the appearance of geniuses who often come too early or too late: Bach was a belated specimen of the style that culminates in his work, while the last works of Beethoven were fifty years ahead of their "due" time.

#### Medieval Church Music

Throughout the Middle Ages musicians were concerned above all with the basing of large structures on the plainsong melodies of the Church. (The secular solo songs of the noble troubadours and *Minnesinger*, and of the common people, followed a simpler course.) The medieval Church composers ran their plainsong chants in mainly parallel courses (*organum*) or combined several chants, sometimes with secular songs and words simultaneously (*motets*), and each development demanded or was made possible by an advance in the notation of music: methods of indicating first the relative, then the precise rise and fall of the voice, then the relative, finally the exact length of each note. The earliest "master" period of polyphonic music came in France at the end of the 12th century and beginning of the 13th, with Léonin and Pérotin. It was succeeded about 1330 by the so-called *ars nova*, in which (among other changes) the old church modes began to show some of the characteristics of the modern major and minor scales, apparent still earlier in the songs of the *trouvères* and troubadours. The outstanding master of the *ars nova* was Guillaume de Machaut, earliest musician to compose a complete setting of the Mass. In the music of this period, and for long after, composition was essentially a matter of combining strands of melody—performed indifferently by voices or instruments or both together or both in alternation—without overmuch regard to harmonic clashes. Successive refinements tended to smoothe out such

clashes, while the tendency of *ars nova* to place the most important part in the highest voice instead of in the tenor was also developed. Successive waves of polyphonic achievement reached their peaks in Dunstable, Dufay, and Binchois (early 15th century); Obrecht, Okeghem, and Josquin des Prés (late 15th century); Palestrina, Lassus, and Victoria (16th century).

By the 16th century, however, the high polyphonic style was no longer practised only in the music of the church. Important secular polyphonic forms such as the madrigal had come into existence, still half-vocal, half-instrumental at will; while instrumental music had developed parallel forms of its own, such as the fantasy. Keyboard instruments other than the organ came into use, and the virginals, a species of small harpsichord, were specially cultivated by the Elizabethan composers of England, headed by Byrd. But from this time onward the names of eminent composers multiply too rapidly for mention.

#### The Earliest Operas

The end of the 16th century saw the birth of important new forms: the opera and oratorio, always closely allied. Opera came into existence through the efforts of a group of Florentine amateurs to recapture the secret of performance of Greek tragedy; they thought they had found it in what we know as recitative (musically declaimed speech) and the earliest operas, such as Peri's *Euridice* (1600) and Monteverdi's *Orfeo* (1607) consisted mainly of recitative. But Monteverdi was no doctrinaire; even in *Orfeo*, and much more in his later works, he refused to submit music entirely to the domination of the word, and he injected frankly melodic elements into his recitative, as well as interspersing instrumental passages. This tendency for music to take the upper hand in opera grew continually stronger for something like a century and a half, particularly in Italy, although in France it was resisted. Since then from time to time "reformers" of the opera have appeared (e.g. Gluck in the middle of the 18th century, Wagner and Moussorgsky in the 19th) to reassert the importance of the dramatic element in opera.

During the 16th century vocal polyphony lost its former predominant position, though instrumental polyphony lived on in the fantasy and kindred forms and in

their later offspring, the fugue. But side by side a new kind of instrumental music was asserting itself: a mainly harmonic kind of music, disregarding melodic lines except in the highest and lowest parts ("melody" as popularly understood, and bass). The filling-in between top and bottom was a matter of more or less artistic routine, seldom written out in full but merely indicated by figures under the bass (*basso continuo*) which would be played simply if by a stringed instrument, with improvised chords if by organ or harpsichord. This texture was used alike for solo songs with lute accompaniment, for instrumental music in opera, for suites of dances, and for sonatas (sets of generally four instrumental pieces, of contrasted speeds).

#### 18th Century Styles

During the first half of the 18th century this kind of texture gradually triumphed over the harmonic polyphony whose last great exponent was J. S. Bach. By the middle of the century the melody-with-accompaniment was completely triumphant in the so-called *galant* style, relatively flimsy in texture, considered by its exponents to be more expressive than the older music. The operatic overture or "symphony before the opera," a set of three pieces (quick-slow-quick), had become so popular that overtures—or symphonies, as they now came to be called—were written independently for performance at public concerts to which anyone who paid could gain admittance—in sharp distinction from older music-making which had been either in ordinary living-rooms or in the halls of palaces or in the open air. In the *galant* style an old instrumental form, the concerto (in which different instrumental groups or soloists were pitted against each other), began to take on a new form in which a soloist was pitted against an orchestra and seized the opportunity to display his virtuosity. The orchestra itself, which right up to Bach's time had been an *ad hoc* collection of instruments, now began to adopt a settled constitution, of which strings formed the basis, with the various wood wind, horns, trumpets, and drums (at first only some of these) in pairs as regular auxiliaries.

More settled and more elaborate instrumental resources made it possible for composers to indicate more precise methods of filling in the harmonic texture. The space between melody and bass could be

filled with instrumental figuration, so that the keyboard *continuo* part became redundant and died out. Similarly, whereas in private music-making (chamber music) the favourite instrumental combination had been two violins, a cello to play the *continuo* part simply, and a harpsichord to play it with harmonic filling-out, the favourite chamber combination towards the end of the 18th century was the string quartet of two violins, viola and violoncello, which was self-sufficient without a keyboard instrument. And the favourite keyboard instrument itself was now the pianoforte, with expressive powers and dynamic range already far exceeding those of the harpsichord and its still weaker brother, the clavichord. The music of this period, above all its instrumental music, reached its highest development in the hands of four composers all domiciled in or near Vienna: Haydn, Mozart, Beethoven, and Schubert, of whom Mozart was also one of the greatest of all opera composers and Schubert virtually, though not actually, the creator of the modern song with piano accompaniment.

#### The Growth of Romanticism

The "Viennese classical period" was succeeded by what is generally known as 19th century romanticism. Romanticism had many facets: exploitation of new orchestral resources and much larger orchestras by Berlioz, Wagner, Rimsky-Korsakov, and others; exploitation of the resources of the piano by Liszt, Chopin, Schumann, and Brahms; opening up of new harmonic resources by several of these composers; closer linking of music with literature and painting. "Programme" music, *i.e.* music that attempts to imitate or suggest non-musical happenings, pictures, even stories, was nothing new in the 19th century. Every generation had practised it in one way or another either through more or less direct imitation or through associative sound-symbols. But the 19th century was not only fond of programme music, but linked its essays in it with literature and invented a new term to describe this kind of orchestral piece: the symphonic poem. The tendency was carried to its furthest extreme towards the end of the century in the works of Richard Strauss. But the real keynote of romanticism was a kind of personal aggrandisement, most obvious in its exploitation of instrumental virtuosity (pianists and violinists) but also permeating musical crea-

tion. Composers no longer worked as craftsmen first and foremost; they now wrote to express their personalities, wrote piano pieces that were essentially intimate diary entries (Schumann) and symphonies that were spiritual confessions (Tchaikovsky). They claimed the right to be free, despised working to commission. A similar form of self-consciousness led nation after nation to attempt to find its own musical language, usually founded on its folk-song, instead of being content to speak an international musical language with an accent or at most in a dialect; the movement was headed by the Russians in the mid-19th century, while the English brought up the rear at the beginning of the 20th century.

The romantic attitude, the attitudes of art-for-art's-sake and art-as-personal-expression, gradually led through the first quarter of the 20th century to a species of inbreeding, to music so refined and subtilised that only professional musicians or leisured amateurs could understand and appreciate it. The composer wrote for himself or his fellows—and then illogically felt aggrieved because the layman ignored it, preferring a different kind of "modern music," the popular music of the American negro: jazz. During the 1930s this gulf between the contemporary composer and the lay public began to narrow, partly through a natural reaction on the part of the musicians, partly because of government pressure in the totalitarian states where all art must serve an ideology, partly because of economic pressure and inducements (such as the large sums paid for commissioned film music) in the capitalist democracies. Now in the mid-century contemporary music is, if not popular, at least not completely out of touch with the ordinary music lover, particularly since the

latter for his part has so many opportunities to familiarise himself with little-known music through radio and the gramophone.

*Bibliography.* A History of Music in England, E. Walker, 2nd edn., 1924; The Oxford History of Music, various authors, 7 vols., 2nd ed. 1929-34; The Progress of Music, G. Dyson, 1932; The Oxford Companion to Music, P. A. Scholes, 1939; Grove's Dictionary of Music and Musicians, 4th edn., 6 vols., 1940.

**Music, GUILDHALL SCHOOL OF.** Institution for the musical training of amateurs and professional students founded in 1880 by the corporation of the City of London. Its original home was a warehouse in Aldermanbury, and the present fine building with entrance in John Carpenter Street, E.C., was opened 1887 and enlarged 1898.

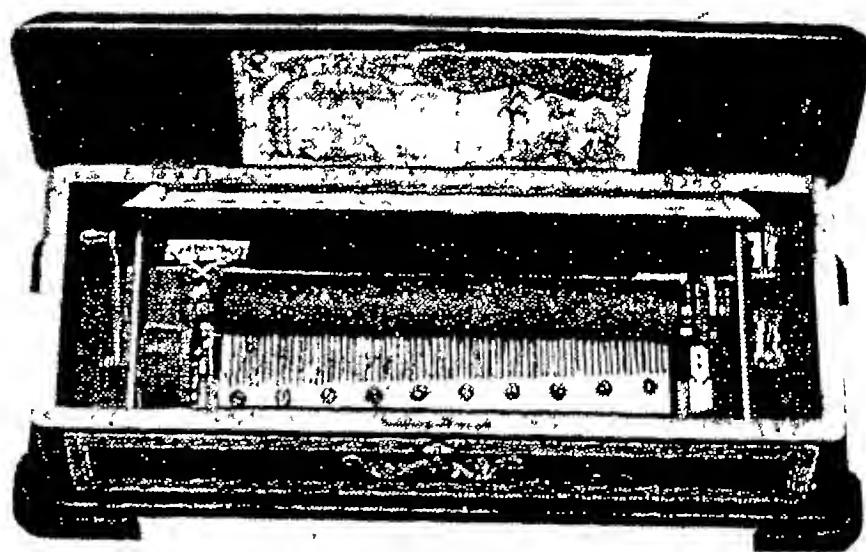
**Music, ROYAL ACADEMY OF.** London's oldest school for musical training, founded 1822 and opened 1823 at Tenterden Street, Hanover Square. The present building in Marylebone Road, with excellent concert hall, was opened 1911. Diplomas of fellowship, associateship, and licentiateship (F.R.A.M., etc.) are awarded; and the academy is represented with the Royal College of Music in an associated board for local and school examinations throughout the British empire.

**Music, ROYAL COLLEGE OF.** London institution for musical study and training founded by Edward VII, as prince of Wales, in 1882, as successor to the national training school for music, and incorporated by royal charter in 1883. The premises in Prince Consort Road, Kensington, were opened 1894, a fine concert hall being added 1901. The college owns a valuable library and the Donaldson museum of old and rare musical instruments.

**Music, SCHOOLS OF.** Institutions for musical training in addition to those detailed above are mentioned under the heading School of Music.

#### Musical Box.

Instrument producing music by mechanical means. Clock-work, driven by a spring, moves a cylinder from which pins project at proper positions, and strike the ends of steel vibrators tuned to the notes of the scale, the vibrators and the



Musical Box opened, showing comb and barrel actuated by the clock-work on left



continuous steel plate from which they are cut, and which gives them resonance, forming a sort of graduated comb. Mechanical musical toys of great ingenuity were made as early as the 15th century, especially in the Netherlands: in their present form they date from the beginning of the 19th century, and are still chiefly produced in Switzerland, the country of their origin. Some of the larger specimens contain as many as 36 tunes on one barrel, and allow of exchanging barrels.

**Musical Comedy.** Type of light stage entertainment especially popular in Great Britain and the U.S.A. Similar to the operetta in form, musical numbers being interspersed with spoken dialogue presenting some sort of light-hearted love story, it acquired its own recognizable conventions built around the stock rôles of juvenile lead (or hero), ingénue (or heroine), soubrette, comedians, and chorus. The heyday of musical comedy in England was reached in the first decade of the 20th century, with the London productions of George Edwardes (*q.v.*) at the Gaiety theatre and Daly's theatre, and such popular exponents of the art as Gertie Millar and Huntley Wright.

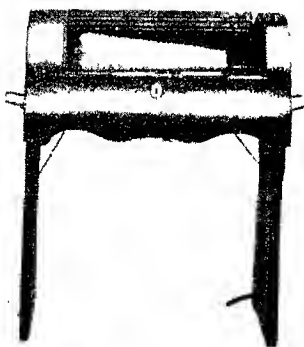
American influence and the competition of revue gradually altered its character, increasing its liveliness, giving more importance to the star performers, especially the comedians, and emphasising the spectacular aspect, though possibly losing some of its charm.

**Musical Festival.** Music-making on a large scale, the concerts being generally spread over more than one day. In England the oldest is The Three Choirs' Festival of Gloucester, Worcester, and Hereford, founded in 1724, and held annually in the above cities in rotation. Other important festivals, held mostly at triennial periods, were Birmingham, 1768; Norwich, 1824; Leeds, 1858; Bristol, 1878; Cardiff, 1892; and Sheffield, 1895. A London Music Festival was inaugurated by the B.B.C. some years before the Second Great War. Such festivals aim not only at the performance of standard works of known popularity, but also at the encouragement of British art, by commissioning native compositions, and occasionally foreign works, *e.g.* Mendelssohn's *Elijah*, Gounod's *Redemption*. The Glyndebourne (*q.v.*) operatic festival was annual 1934-39. An annual international

festival was opened at Edinburgh in the autumn 1947.

A minor type of musical festival is the competition festival founded on the lines of the Welsh Eisteddfod. There are many of these, great and small, held regularly in different parts of the U.K., and even more in the U.S.A.

**Musical Glasses.** Musical instrument, consisting of glass vessels either selected for their in-



**Musical Glasses.** An ingenious musical instrument of the 18th century. From *Old English Instruments of Music* Methuen & Co.

trinsic notes, or tuned by having water poured into them. Penetrating tones are produced by rubbing the rims of the glasses with the moistened finger. The device, first known in the 17th century, was improved by Richard Pockrich, an Irishman, and became a fashionable entertainment in the middle of the 18th century, being mentioned by Goldsmith in *The Vicar of Wakefield*. It was further developed by Benjamin Franklin, who mechanised it by mounting the glasses on a revolving spindle, their lower edges being made to pass through water. Mozart and Beethoven were among those who composed works for the mechanised instrument, which was alternatively called the harmonica.

**Musical Terms.** Terms used to indicate the various means by which a composer shows the precise character of a musical work. They fall into different classes according to their nature and significance. The first has to do with notation, *e.g.* staff, clef, notes, rests, bars, sharps, flats, etc., and covers pitch, time, and rhythm. The next class embraces terms referring to the pace of the music, such as *allegro*, *moderato*, *andante*, etc., of equal importance being those of the third class affecting style, phrasing, and expression, such as *animato*, *grazioso*, *brillante*, and the like. The dynamic class is concerned

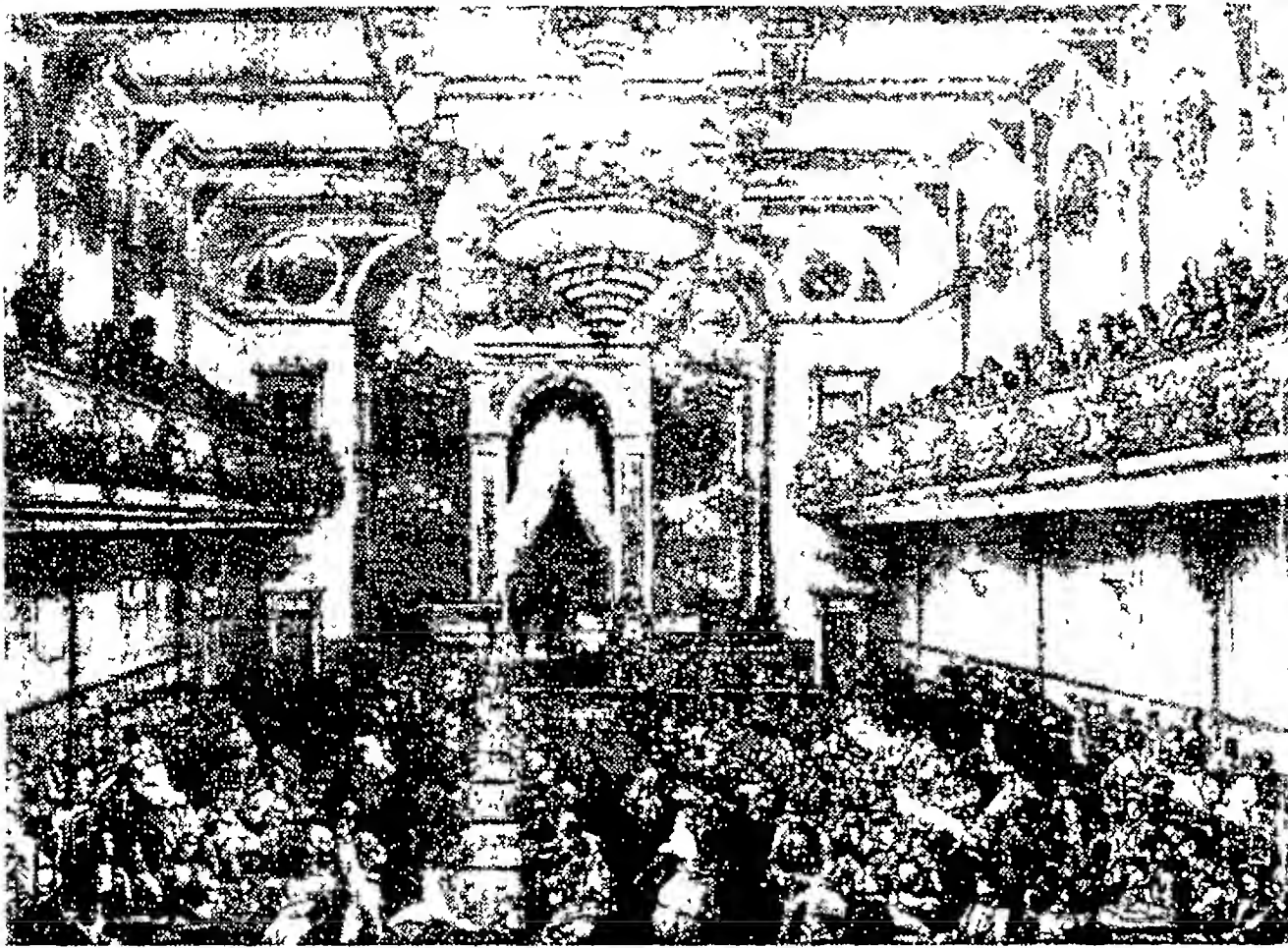
with the various degrees of force required, such as *p.* (*piano* = soft), *f.* (*forte* = loud), *crescendo* (increasing), *diminuendo* (lessening), etc. Many of these terms, with the exception of those in the first class, may be qualified by additional terms, such as *un poco* = a little (*un poco animato* = rather animated), or *non troppo* = not too much (*non troppo allegro* = not too fast). Then come the names of voices, instruments, etc., and next the terms used in respect to melody and harmony, such as *scale*, *interval*, *consonance*, *dissonance*, etc. Lastly, there are purely mechanical directions, *e.g.* *volti subito* = turn over the page quickly, *da capo* = from the beginning, and so on.

The usual language employed is Italian, because in medieval days the great centres of musical instruction were in Italy. The words indicating style, pace, etc., were naturally those in everyday use, but they became conventionalised. Thus *allegro* (gay) now equals quick, and *andante* (going or moving) equals slow. For over a century composers have shown an increasing inclination to use their own language. Consult *Everyman's Dictionary of Music*, ed. E. Blom, 1946.

### Music and Dancing Licence.

Official authorisation required before any place can be used for public dancing or music. In London the licences are granted by the L.C.C. An occasional licence may be granted. In Middlesex licences are issued by the co. council. In parts of the Home Counties, mainly those parts within 20 m. of London, licences may be obtained from the co. or co. bor. council. Throughout the rest of England and Wales the licensing justices, *i.e.* the justices who grant licences for the sale of intoxicating liquor, issue also the music and dancing licences, in areas in which the Public Health Acts Amendment Act, 1890, has been adopted or applied. In some other areas local Acts of parliament make special provisions for that area. Where the Public Health Acts Amendment Act has not been adopted and where there are no local Acts no licence is required.

Conditions may be attached to a licence which *inter alia* may relate to the structural arrangements of the building in which the entertainment is to take place. A licence cannot be granted for dancing on a Sunday although a licence may be granted for a musical entertainment which does not infringe Sunday Observance Act.



Music Hall. Interior of Weston's Music Hall, High Holborn, predecessor of the Royal Holborn, from a print about 1865. Refreshments were served at the tables, while the chairman and his circle of "gilded youth" sat immediately before the stage in the place now occupied by the orchestra

**Music Hall.** Place of amusement licensed for the performance of music, dancing, and varied public entertainment. It is thus distinct from a theatre, which is intended for the exhibition of stage plays. The variety entertainment of the music hall is a natural development of the informal smoking concert, performers at which were regular frequenters of the tavern. The licensee of the premises next engaged professional singers and, making no charge for admission, recouped himself by the sale of refreshments to members of the audience between the items on the programme, which were announced by a chairman.

Saloon theatres attached to the larger taverns were the next stage, being licensed by the magistrates and permitted to charge for admission to the entertainment, which steadily encroached further upon the privileges claimed by the lessees of the patent theatres. In 1834 a performance of *Othello* at the Britannia, Hoxton, brought matters to a crisis. The producer and performers were fined, but the consequent agitation led to the abolition by parliament of the patents, and to competition wholesome in its effect upon theatres and music halls alike.

The first music hall of the modern type was the Canterbury in Westminster Bridge Road, opened 1849. Others followed, not only in London but in provincial centres, where such enterprises as Moss Empires Ltd. established chains of music halls covering the leading towns, enab-

ling music hall artists to undertake regular tours. Its robust form of entertainment, owing little to the aspirations of culture and refinement but a great deal to broad human appeal in comedy, sentiment, and sensation, made it the ideal entertainment for the so-called man in the street. But with the growing competition of the cinema and of revue after the First Great War the great days of the music hall appeared to have passed, though the old tradition is still here and there maintained. Sir Oswald Stoll (*q.v.*), who ran the London Coliseum, was said to have killed the music hall by making it respectable. It is essentially English in its development, though vaudeville in France and burlesque in the U.S.A. are broadly synonymous terms. Consult *The Story of the Music Hall*, A. Haddon, 1935; *Winkles and Champagne*, M. W. Disher, 1938; *The Early Doors*, H. Scott, 1947.

**Musicians' Company.** London city livery company. Originating from earlier guilds, it was first granted authority over all minstrels within the City by an Act of common council, dated 1500. Later, dancing masters were also included. Under the original and subsequent Acts it exercised control over the profession in the City until late 18th cent. The company administers a number of scholarships and



Musicians' Company Arms

prizes and a fellowship in music. The clerk's office is at 1, New Court, W.C.2.

**Musk** (*Mimulus moschatus*). Perennial herb of the family Scrophulariaceae and a native of N. America. The above-ground branches and thin, opposite, oblong leaves are coated with soft hairs which up to 30 years ago gave off the well-known musky odour. The plant is now scentless throughout the world. Its yellow tubular flowers have five lobes, and the stigma has two lobes, which are irritable and close together on being touched. Musk, introduced to Great Britain in 1826, is a favourite pot plant, easily raised from the minute seeds, or by division of the numerous underground stems. It requires frequent, copious waterings. Harrison's musk is a larger, cultivated form. See *Mimulus*.

**Musk.** Dried secretion from certain glands of the male musk deer (*Moschus moschiferus*). Its natural purpose appears to be for the attraction of the female. It was long in esteem as a medicine, but now its major use is as a fixative in perfumery. As imported it forms soft, greasy lumps of a red-brown tint, giving out the strong, peculiar odour always associated with the name. It can be dissolved in ether. Like civet, it forms the basis of many choice perfumes; and in its natural condition is probably the most enduring of all odours—so long as the substance remains, the odour suffers no diminution. When newly extracted from the deer, however, it is more repulsive than attractive. Artificial musk is used industrially.

**Musk Deer** (*Moschus moschiferus*). Small species of deer found among the mountains of Central Asia. Usually found in pairs, never congregating in herds, it is about 20 ins. high, has a greyish-brown



Musk Deer. Young female of the Central Asian species  
W. S. Berridge, F.Z.S.



pelt, and in certain anatomical features approaches the antelope. Neither the male nor the female has antlers. The upper canine teeth of the male are about 3 ins. long, and project as conspicuous tusks. It is much hunted for the valuable musk, secreted by an abdominal gland, and used as an ingredient in many costly perfumes.

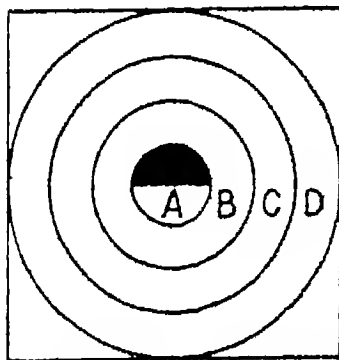
**Muskegon.** City of Michigan, U.S.A., the co. seat of Muskegon co. Situated along Muskegon Lake, through which the Muskegon river enters Lake Michigan, 39 m. N.W. of Grand Rapids, it is served by the Grand Trunk rly. and by steamers plying to Chicago. Michigan timber passed through this port until the opening of the 20th century. Now motor vehicles and machine tools are the major manufactures. Muskegon has a good harbour, which exports fruit and garden produce. Settled in 1834, incorporated in 1861, it became a city in 1870. Pop. (1950) 48,429.

**Musket.** General term for any form of smoothbore firearm formerly used by a foot soldier. Muskets were introduced in the latter half of the 16th century. They may be fired by the percussion system or by a flint, or by the application of a match to powder in the pan, hence the terms percussion musket, flint musket, matchlock. The harquebus, snap-haunce, caliver, fusil, and carbine were in all essentials muskets. As late as 1867 the troops in India had seven different kinds of smoothbore firearms, viz. two muskets, four carbines, and a fusil for sergeants. The fusil used the musket ammunition, but was 1 lb. lighter to carry. So-called carbines were of the same calibre as the fusil and about the same weight. The official manual on shooting is still called British Army Musketry Regulations. See Brown Bess; Firearms; Flintlock; Fusil; Guns; Matchlock; Rifle.

**Musketry.** Art of shooting with portable firearms in general, and with the military rifle in particular. Accuracy of small-arm fire as a factor of military importance has been a gradual development of organized warfare. It probably attained its zenith in the S. African War. Every endeavour was thereafter made to train British infantry to become expert shots at all ranges as well as attaining great proficiency in rapid fire. As a corollary, musketry was practically taught for the prone position.

The German army, on the other hand, fostered rapidity of fire rather than accuracy for the gene-

ral body of the troops. This system developed firing from the hip, standing, or kneeling positions as of at least equal value to the prone



Musketry. Standard practice target. A, bull; B, inner; C, "magpie"; D, outer

able to get into close touch.

In the Second Great War automatic weapons, such as the Sten and Thompson sub-machine-guns, largely replaced the rifle. These had a short range, 50-100 yds., and were often used when the firer was moving; so much of the old musketry training gradually fell into disuse. The No. IV rifle, issued during the war, was sighted only up to 500 yds. and was not so accurate as the S.M.L.E., thereby discounting some of the skill of the trained rifleman.

**Musketry, SCHOOL OF.** Military establishment for providing training in the principles of shooting with the rifle. In Great Britain a school of musketry was established at Hythe, Kent, in 1854. It is now a branch of the Small Arms School at Netheravon, and thereat instruction is given in the use of the rifle, revolver, bayonet, and grenade. The courses were remodelled upon the adoption successively of the Snider (1866), Martini-Henry (1870), the Lee-Metford, and other rifles. At the head is a general officer known as the commandant.

**Muskogee.** A city of Oklahoma, U.S.A., the county seat of Muskogee co. Built near the confluence of the Verdigris and Grand rivers with the Arkansas, 50 m. S.E. of Tulsa, it is served by rlys. The surrounding district produces cotton, oil, zinc, and lime and industries include the manufacture of lead products, oilwell equipment, road machinery, and tents. There are a state school for the blind, veterans' hospital, and commercial college. A Bacone, 2 m. to N.E. is Indian university. Muskogee was founded in 1870 and became a

city in 1898. During 1900-10 the pop. increased sixfold; in 1950 it was 37,289.

**Muskogees** (Algonquin, Creeks). North American Indian tribe formerly ruling the Creek confederacy. Originally immigrant from the W., they were found by British colonists in the 17th century in Georgia and Alabama, whose many sea-inlets suggested their name. The Creek war, 1813-14, cost them most of their land. By a conveyance, 1852, the Creeks ranked in Oklahoma as one of the five civilized tribes, until their separate nationhood ceased in 1906. In 1913 the Creeks numbered 18,776. The Muskogees give their name to the Muskogian family, which embraces Chickasaws, Choctaws, Natchez, and Seminoles. See American Indians.

**Muskoka.** Region of great natural beauty in the Lakes Peninsula, Ontario, Canada. It contains a river and lake of the same name. From 800 to 1,000 lakes are connected by hundreds of streams all available for passage by canoe. The river rises in the S.W. corner of Algonquin national park, and flows S. to Lake Simcoe, through the E. end of Lake Muskoka. On it the South Falls are notable. The lake is 20 m. long. The region is a summer camping ground for Canadians and Americans, and contains several hotels. Steamers ply on the larger lakes, and the region, which is crossed by the C.P.R. and C.N.R., attracts visitors for hunting, angling, boating.

**Musk Ox** (*Oribos moschatus*). Large ruminant mammal. Found in the Arctic regions, it is placed by zoologists between the sheep and ox, but is probably a type of sheep. Its flesh is tainted with a musky flavour. It is covered with long thick, brownish hair, and the horns of the male are wide and flattened on the forehead. Its range is now confined to the ex-



Musk Ox. Specimen of the North American ruminant found in Arctic regions

treme N. of America; but formerly it occurred in N. and Central Europe, and bones are found in Great Britain. It lives amid the deep snow of the most barren regions, and seldom long survives removal to Europe.

**Muslim League.** Organization of Muslims in India. Formed in 1906, it had as its immediate aim the achievement by Muslims of a greater share in the control of Indian affairs. During the 1920s there was serious internal dissension, but in 1934 a measure of reconciliation was effected, and on the eve of the first elections held under the Government of India Act of 1935 the Muslim League emerged as a powerful organization.

Under its president, Mohammed Ali Jinnah (*q.v.*), the league worked for Indian independence, but saw a danger of the country being dominated by Hindus. At a meeting in Lahore in April, 1940, a resolution was adopted calling for the formation of a separate nation for Indian Muslims; despite urgent appeals to the Muslims to remain within the Congress party, anti-Hindu feeling grew among them and crystallised into the demand for Pakistan (*q.v.*). Jinnah stated that, without prejudice to later adjustment of larger issues, the league was willing to cooperate with the British in war against the Axis.

The league's claim to represent the 90,000,000 Muslims in India was warmly disputed by several groups. A number still worked in the Congress party for the establishment of a unified independent state. But the influence of the league increased in Sind, Bengal, Assam, and the N.W. Frontier province, and in 1943 Muslim League ministries were formed in Sind and Bengal.

The interim government proposed by the British cabinet mission of 1946 to work out a constitution for an independent India was to contain five members of the Muslim League balanced by five Congress members. On July 29, the league decided to withdraw support from the scheme and launch a policy of "direct action"—which led to mob violence in Calcutta, Dacca, and elsewhere in Aug. Sir Firoz Khan Noon and other leaders renounced all titles conferred on them by the British. When the viceroy, determined to proceed with plans, nominated non-league Muslims to the interim government, the league came into negotiations, and on Oct. 13 five

of its representatives were appointed, though Jinnah declined nomination and his followers boycotted the constituent assembly. The establishment, by the Indian Independence Act of 1947, of an independent Muslim state, Pakistan, embracing W. Punjab, Sind, E. Bengal, Assam, and the N.W. Frontier province, was the triumph of the Muslim League.

**Muslin.** Fine cotton fabric used for dresses, curtains, etc. The name is generally believed to come from Mosul, a town on the Tigris, where the fabric is said to have been first made. Marco Polo refers to muslins of silk and gold made at Mosul. From early times India has been noted for its fine muslins, those of Dacca and Madras being specially delicate. There are also silk muslins, but these are of less importance.

**Musorgsky.** See Moussorgsky.

**Muspratt, JAMES** (1793–1886). British chemist. Born in Dublin, Aug. 12, 1793, he was a druggist's apprentice, and then served in the Peninsular War with both the army and the navy. Having received a small property after a long chancery suit, he



James Muspratt,  
British chemist

started the manufacture of chemicals in Dublin in 1814, and in 1823 moved to Liverpool, where he began to make soda by the Leblanc process. He opened works at Widnes and St. Helens, and made sulphuric acid. A friend of Liebig, he undertook the manufacture of super-phosphates and artificial manures invented by that chemist. The founder of the South Lancashire alkali industry, Muspratt died in Liverpool, May 4, 1886.

**Muspratt, JAMES SHERIDAN** (1821–71). British chemist. Born March 8, 1821, in Dublin, eldest son of the above James Muspratt, he studied chemistry at Glasgow and University College, London. He took a post under Liebig at Giessen, where he carried out researches on sulphites, toluidine, and nitraniline. Returning to England, he settled in Liverpool, where he died April 3, 1871. His Dictionary of Chemistry, 1854–60, a standard work, was trs. into Russian and German.

**Musquash** (*Ondatra zibethica*). N. American rodent, found chiefly in Alaska and Canada. The body

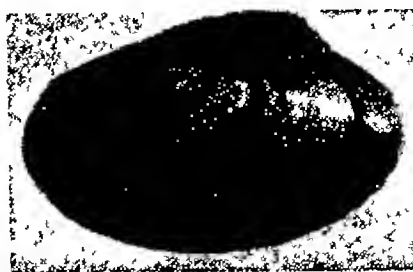


Musquash. Specimen of the small North American rodent (also known as musk-rat), extensively trapped for its fur

with the head measures about a foot, the stout tail is laterally compressed to suit its semi-aquatic habits; the hind feet are partially webbed. Herbivorous, it favours the margins of lakes and ponds, where in autumn it amasses great heaps of edible roots, reeds, and sedges, often plastered with mud on the exterior. Its burrows communicate with this winter food store. Its musky scent-glands have earned for it the alternative name of musk-rat, shared by the unrelated desman (*q.v.*) and the Indian shrew. The musquash is trapped for the sake of its fur. (See Fur.)

Musquash farms were started in the U.K. 1927–28, but the animal did such damage to river banks that an extermination campaign was ordered, and it is now almost extinct.

**Mussel.** Name popularly applied to a large number of bivalve molluscs, but more correctly to the common mussel, *Mytilus edulis*, of the markets. Abundant on the rocks around the British coasts, it is found in great clusters attached by the thread-like byssus which is produced by the foot. It is an important food mollusc, and thrives best around the mouths of rivers, where it obtains an abundance of food; but it is liable to pollution from sewage. Seven species of fresh-water mussels occur in Great Britain, one of them—the swan mussel—sometimes attaining a width of over 7 ins. The pearl mussel occurs in the mountain streams of the N. and W. Fresh-water pearls were formerly highly valued as gems, but

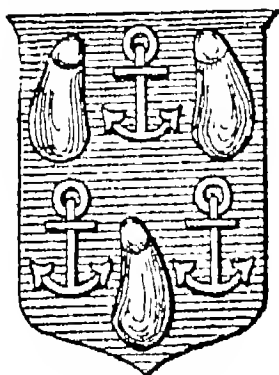


Mussel. Duck mussel,  
*Anadonta anatina*

they lack the lustre and beauty of the product of the pearl oyster. The pearly shells of some fresh-water mussels are used in U.S.A. for button making. See Mollusca.



**Musselburgh.** Mun. and police burgh of Midlothian, Scotland. It stands on the Firth of Forth, where the river Esk enters it. It is 6 m. E. of Edinburgh, of which it is practically a suburb, and is connected by rly. and bus. The chief buildings are the old tolbooth, town hall, and Pinkie house.



Musselburgh arms

Loretto school occupies the site of a chapel dedicated in the 16th century to Our Lady of Loretto. The industries include fishing, market gardening, and the making of wire, paper, and fishing nets. Musselburgh proper and Fisherrow across the Esk, where there is a harbour for the fishing boats, are united by bridges. The town has fine golf links and a racecourse. The battlefield of Pinkie is near the town. Pop. (1951) 17,012. See Loretto; Pinkie.

**Mussert,** ANTON ADRIAAN (1894-1946). Dutch politician, born at Werkendam, N. Brabant. He was chief engineer of waterways in the province of Utrecht, 1927-34. In 1931 he founded the National Socialist movement in the Netherlands, soon making it a replica of the German Nazi party, even to the use of the swastika. Mussert collaborated with the Germans on their entry into the Netherlands in May, 1940, and in 1942 Hitler conferred on him the title of *Führer*. He was arrested by Canadian troops in Utrecht, May 7, 1945; sentenced to death by a special court in Dec., and shot, May 7, 1946.

**Musset,** ALFRED DE (1810-57). French poet, novelist, and dramatist. Born in Paris, Dec. 11, 1810,



Alf. de Musset

the son of a war office official, he was admitted to the circle of romantics of whom Victor Hugo was the chief, and soon established himself as one of its most remarkable members. Early in 1830 he published *Contes d'Espagne et d'Italie*, which met with a cordial reception; and before the year was out his first comedy, *La Nuit Vénitienne*, was produced at the Odéon Theatre, but was not

successful. The set-back was but brief, for with *La Coupe et les Lèvres*, and *À quoi rêvent les Jeunes Filles*, two short plays published in 1832, his importance as a dramatist was immediately recognized.

Two tragi-comedies, *André del Sarto* and *Les Caprices de Marianne* followed, in 1833, and towards the close of that year he set out with George Sand (Armandine Dudevant), who was six years older, for Venice. The two writers had conceived a passion for one another, but after a few months together they separated. This episode was followed by a period of literary activity, marked by the production of some of his finest work. In 1838 de Musset was appointed librarian at the home office in Paris. A few years later

he began to suffer much in health; but in 1845 published his delightful proverb play, *Il Faut qu'une Porte soit ouverte ou fermée* (first acted three years later), and in 1847 had a stage success with *Un Caprice*. He died May 2, 1857.

Great alike as poet, dramatist, and story-writer, de Musset combined fervent passion and great lyrical genius with the finest wit and rare dramatic ability. Two years after his death George Sand published an account of her liaison with him, in the form of a novel, *Elle et Lui*; to which the poet's brother Paul retorted with *Lui et Elle*. De Musset's works were published in ten volumes in 1876. *Consult Life*, P. de Musset, 1877; *Correspondence de George Sand et d'A. de M.*, 1904; *Life*, H. D. Sedgwick, 1932. See Sand, George.

## MUSSOLINI: DUCE OF ITALY

C. M. Franzero, writer on Italian Affairs

*The success and ignominious death of the Italian dictator who, seeking to raise his country to a height of glory, pushed her into unimaginable miseries. See also Abyssinia; Italy; History; Italy, Campaign in; and biographies of Mussolini's Italian associates and opponents, Badoglio; Ciano; Matteotti, etc.*

Born on July 29, 1883, at Predappio, a village in the Romagna, near Ravenna, Italy, Benito Mussolini was the son of a blacksmith. He inherited his father's socialist views, and after a short time as a school teacher went as a youth of 17 to Switzerland, where he lived three years, working as a stonemason and at odd jobs, and becoming acquainted with political exiles. Returning to Italy, he became a socialist agitator, and in 1911 was sent to prison for his denunciation of the Tripoli war. On his release he was made editor of the socialist organ *Avanti*, a post he held from 1912 to 14. A pacifist before the First Great War, he changed his views after it started, left *Avanti*, and founded the *Popolo d'Italia*, in which he preached patriotism and intervention in the war. It has been suggested that French gold helped in this conversion. He joined a Bersaglieri regiment in 1915, and in 1917, while out on practice bombing, was seriously wounded and incapacitated for war service. The Caporetto disaster of 1917 produced a mood of defeatism in Italy, to counter which Mussolini formed the *fasci di combattimento*—groups composed at first chiefly of ex-soldiers which adopted the Roman *fascies* as their symbol, and developed later into the Fascist party, growing in strength in the chaotic situation in Italy after the war.

The struggle between fascists and communists went on for some time. Only Mussolini and 30 other fascists secured seats at the elections of 1921; but on Oct. 24, 1922, before a parade of 40,000 fascists at Naples, Mussolini denounced the govt. and demanded a new administration, with five portfolios for his followers. Three days later, with an organization one million strong behind him, he went to Milan, ordered a national fascist rising, and staged a march on Rome, he himself following later by train when on Oct. 30 the king, fearing civil war, invited him to form a govt.

Thus Mussolini took power. Notwithstanding the many excesses of the Fascist régime, the Italian people for long felt content with Mussolini. His rule was from the outset dictatorial. Discipline and obedience were ruthlessly enforced; opponents were silenced; public opinion was coerced, and the press was made an instrument of the régime (1928). Mussolini often kept as many as nine portfolios in his own hands, according to himself privileges once reserved for sovereigns. His title of address was *duce* (leader). But industry



Mussolini, Italian dictator

revived, efficiency increased, and—greatest achievement in the eyes of a nation labouring under a sense of having been treated like a poor relation at Versailles—Mussolini made Italy noticed abroad.

His first opportunity to impress himself upon the world came in 1923, when the Italian delegates to the Greco-Albanian boundary commission were murdered. Imputing the responsibility to the Greek govt., Mussolini demanded an indemnity, and when Greece failed to satisfy him, he seized Corfu. The conference of ambassadors in Paris ordered Greece to pay the sum demanded, an easy success, which proved the starting point in Mussolini's use of the mailed fist.

#### The "Good European"

During 1924-34 he concentrated on internal reforms, the settlement of the Roman question (Feb., 1929) by the Lateran treaty with the Vatican being in particular an indisputable triumph for him. Events in the outer world enabled him to play the good European. In 1925 he contributed to the appeasement of Europe by joining the U.K. and France in the treaty of Locarno as a guarantor of the Franco-German frontiers. In 1933 he induced the U.K., France, and Germany to sign with Italy a four-power pact which, however, was never ratified; and when, in 1934, the Nazis, who had come to power in Germany, attempted their "putsch" in Vienna and murdered the Austrian chancellor Dollfuss, Mussolini responded by concentrating his troops overnight on the Brenner pass, thus staying the German hand. The following spring, he joined the U.K. and France in condemning Germany's denunciation of the military clauses of the Versailles treaty.

But, like all dictators, he was now itching for conquest. The authority of the League of Nations was at its lowest ebb, Italy was in acute economic distress, and a war against Abyssinia, "to avenge the humiliation of Adowa" suffered by Italy in 1896, seemed timely. Attempts by the League to solve the situation by negotiation failed, and in Oct., 1935, Mussolini went to war against Abyssinia. In Nov. the League decided that economic sanctions should be imposed against Italy, but the principal embargo, on petrol, was never enforced. The Abyssinian war was brought to a rapid and successful conclusion by May 5, 1936, and on May 9 Mussolini proclaimed Victor Emmanuel ruler of Abyssinia and emperor of Ethiopia.

The Abyssinian war left Mussolini with a belief that the U.K. and France were unable to resist any quick action by fascist Italy, and



Mussolini. The Italian duce, seen at his study table in the Palazzo Venezia, Rome

in a spirit of personal revenge against the "democracies," which had tried to thwart him in his conquest, Mussolini threw Italy into the arms of Nazi Germany, with which he formed the Rome-Berlin axis, Oct. 25, 1936. Mussolini's intervention in the Spanish civil war followed. This was most unpopular in Italy and drained the treasury without bringing any benefit to the country; but it confirmed Mussolini's belief that the western democracies were unable to resist an armed attack. In Sept., 1938, the British premier, Chamberlain, appealed to Mussolini to influence Hitler in favour of a settlement with Czechoslovakia, and Mussolini was at Munich able once more to act the good European. Great Britain threw him a bouquet by recognizing the Italian empire and signing an Anglo-Italian agreement. But France took up an attitude of antagonism, to which Mussolini responded with the cry, "Nice, Savoy, Corsica, Tunis!" On Good Friday, 1939, Mussolini invaded Albania; and on May 22 he sealed his fate with the conclusion of a treaty of alliance with Nazi Germany.

When the Second Great War broke out, Mussolini maintained for nine months a policy of "non-belligerency," miscalculating his chances, however, in 1940 by declaring war, June 10, against a U.K. and a France apparently already doomed.

France was defeated, and Mussolini had the satisfaction of entering Nice like a conqueror. But he knew nothing of the British mind and character, and had never listened to counsel. His attack on Greece in Oct. proved a catastrophe. The campaign in N. Africa at first

went better, and Mussolini actually went to the front there, prepared to ride into Alexandria in triumph. But both his and his German ally's forces were eventually driven westward. By May, 1943, he had lost all Italy's African territories, and with the Allied attack on Sicily in July the very soil of Italy was invaded.

The whole land was now seething with discontent, desiring only an end to the war. In an attempt to secure help from Hitler, Mussolini met him at Feltre on July 19; Hitler demanded that the country should be evacuated as far N. as the river Po. He returned to Rome, and at a meeting of the fascist grand council on July 24 (the first time since Dec. 7, 1939) it was moved by Grandi, according to a secret preconcerted arrangement, that the king should resume command of the armed forces. Mussolini, taken by surprise, opposed the proposal violently; but it was accepted after a day of stormy debate. Mussolini went to appeal to the king, only to be asked for his resignation and taken into "protective custody" by his former chief of general staff, Badoglio (q.v.), who formed a provisional govt. to sue for peace with the Allies.

#### Mussolini in Defeat

Mussolini was moved to a winter sports hotel at the top of the Gran Sasso, highest mountain in the Apennines. From there he was rescued by German SS. parachutists, then picked up, with his rescuers, by a Fieseler-Storch aircraft, which landed on a plateau near by, and carried off to meet Hitler in Germany. He did not risk a return to Rome, but moved to Salo, on Lake Garda, where he set up a quisling fascist republic, so adding civil war to the miseries of the Allied campaign against the Germans in Italy. He moved later to Bergamo and then to Venice. One of the first acts of his new "government" was to prescribe the death penalty for violation of the fascist oath of loyalty to the *duce*, and under this the members of the fascist grand council who had voted against him on July 24 were tried at Verona—all except six in their absence. Ciano, his son-in-law, de Bono, and three others were shot Jan. 11, 1944.

When the German surrender in Italy was near, Mussolini tried to escape to Switzerland. He was captured April 28, 1945, by Italian partisans at Dongo, Lake Como, taken to the near-by village of Giuliano di Mezzegare, and there



shot after a 10 minutes' trial, together with his 25-year-old mistress Clara Petacci and 12 members of his "government" who had been trying to escape with him. His corpse and that of Clara Petacci were taken to Milan and hung heads downward in the Piazza Loreto. His body, buried in a secret unmarked grave in a Milan cemetery, was exhumed a year later by fanatical fascists. It was found in Aug. in the Carthusian monastery of Pavia and reburied secretly. In 1957 it was moved to the family grave at San Cassiano.

Thus ended Benito Mussolini, the *duce* once idolised by the Italian people, a man in whom

intelligence was misguided by ambition and vanity, imagination thwarted by his passions. His greatest error was perhaps that he deluded himself into believing that he could resurrect the glories of ancient Rome, although Italy was poor by comparison with those he made his enemies, whereas Rome had been wealthy. Whatever the value of the technical and industrial improvements he introduced into Italy in his earlier years, he left her ruined. His private life was one of notorious irregularities. Physically, he was short, but with a striking face and magnetic eyes; and although in his time of success inclined to corpulence, he liked to display great activity, riding, motoring, and piloting his own plane.

**Bibliography.** Official Life, G. Pini, Eng. trans. 1939; One Man Alone, M. H. H. Macartney, 1944; Memoirs of Mussolini, 1942-43, 1946; M.: Twilight and Fall, R. Dombrowski, 1956.

**Mussorgsky.** See Moussorgsky.

**Mustagh.** See Karakoram.

**Mustagh-ata.** Mt. peak in the extreme W. of Sinkiang, China. An E. outlier of the Pamirs (*q.v.*) it reaches an alt. of 25,760 ft.

**Mustang** (Span. *mostrenco*, a strayer). Name applied to the wild horse found on the prairies of Mexico and California. They are not natives, but believed to be the descendants of horses introduced from Europe by the Spaniards at the time of their conquest in the 16th century. See Horse.

**Mustang.** Single-seat fighter aircraft designed by the North American Aviation co. in the

Second Great War. Moderately successful with the Allison engine on its introduction into squadron service in 1941, the Mustang was repowered with the British-designed Packard Merlin, and became an outstanding all-round fighter. The U.S. army, to whom the Mustang was known as the P-51, added to its effectiveness as a long-range escort by fitting drop tanks. Top speed of the Mustang without these tanks was 470 m.p.h. After the war came the P-82 Double Mustang, with two engines and two tail-carrying booms. See Aeroplane illus. p. 131.



Mustard. Foliage, flowers, and seedpods of charlock

**Mustard** (*Brassica*). Name given to annual herbs of the family

Cruciferae. They are natives of Europe, Asia, and N. Africa. There are three British species known as mustards—black (*B. nigra*), wild mustard or charlock (*B. arvensis*), and white (*B. alba*). These are by some authors separated to constitute the genus *Sinapis*. They are bristly, branching plants from 1 ft. to 3 ft. in height, with variously lobed leaves and yellow flowers, and long rounded seed pods. In the black mustard these stand erect and close to the stem; the prefix has reference to the dark coloured seeds. In the other species the pods stand out from the stem, and the seeds, which in charlock are brown, are in white mustard yellow.

The salad mustard and cress consists of young plants of both species in the seed-leaf stage.

The standard for mustards was defined by an order issued in 1944. "Brown mustard flour" means the product obtained by grinding whole seeds of *B. nigra* or *B. juncea*, or a mixture of them. "White mustard flour" is defined as the product obtained by grinding whole seeds of *Sinapis alba*. The standard for mustard, compound mustard, or mustard condiment is specified in the schedule to the order as of such composition as to yield not less than 0.35 p.c. of allyl isothiocyanate after maceration with water for two hours at 37° C. If amylaceous flours and spices are used the proportion must not exceed 20 p.c. by weight.

**Mustard Gas.** The use of this asphyxiating chemical is described under Chemical Warfare.

**Mustard Oil.** An essential oil, a colourless liquid with a pungent smell, which causes a flow of tears and blisters the skin if allowed to remain on it for a short time. It is obtained from the seeds of black mustard, *Brassica nigra*, and contains a high proportion of allyl isothiocyanate. Artificial oil of mustard, obtained by heating allyl bromide in alcohol with potassium thiocyanate, is largely used in place of the natural oil.

**Mustelidae.** Family of carnivorous mammals, comprising the weasel tribe. It includes the weasels, martens, polecats, stoats, skunks, badgers, otters, etc.

**Muswell Hill.** Residential district of London. In the county of Middlesex, it lies to the N. of Highgate and the E. of Finchley. The name is derived from a well at the top of the hill, one of the low range running through the county. It is well served by rly. and other forms of London Transport. In the district is Alexandra Palace (*q.v.*), while many Scots have made their homes here.

**Muswell Hill Murder.** British murder case. On the morning of Feb. 14, 1896, Henry Smith was found lying dead in the kitchen of his house, Muswell Lodge, N. London, and from the safe £100 in gold was missing. In the kitchen was found a toy bull's-eye lantern, the property of the brother-in-law of one Albert Millsom. He and an associate, Henry Fowler, were missing, and also found to have been well supplied with money after the outrage. They were traced to Bath and captured after a struggle. Millsom made a statement putting the blame for the murder and the robbery on Fowler. While awaiting the jury's verdict, Fowler made an attack on Millsom in the dock and almost murdered him. Both men were hanged.

**Mut.** Egyptian goddess. Forming with her consort Amen-Ra and her son Khonsu the Theban triad, she had her chief temple S. of Karnak. Mistress of the sky, she appears in human form wearing a vulture head-dress and the double crown of Egypt. See Karnak.

**Mutation.** Term applied to the sudden appearance of a new character in a race of organisms. It was applied by de Vries at the end of the 18th century to new forms of *Oenothera lamarckiana* appearing on waste land near Amsterdam and subsequently among offspring of normal plants raised under controlled conditions. De Vries found the mutants (new forms) could pass their

peculiarities on. Because of this, and the marked differences between the mutants and their parents, he concluded that evolution occurs by sudden steps rather than by the slow accumulation of small differences suggested by Darwin.

Unexpected forms having markedly new characteristics have for long been known to horticulturists as sports; and the appearance of new characters is not uncommon in both plants and animals. Many such mutants are found to differ from the original stock in their chromosome complements, *e.g.* by the presence of extra members or even additional sets of chromosomes. Other mutants yield genetical evidence of a change having occurred in one or other of their genes, a change probably comparable to a change in chemical constitution and called a gene mutation. See Evolution.

**Mute** (Lat. *mutus*, dumb). Word used in several connotations. Primarily it denotes a person congenitally lacking the power of speech, or who has been deprived of it by long continued deafness, then called a deaf mute. (See Deafness.) The term is also applied to a person who, though able, refuses to speak, and specifically in law to one who "stands mute."

If a prisoner, called on to plead guilty or not guilty, makes no answer, a jury decides whether he is mute of malice or by visitation of God. If he is found mute of malice a plea of not guilty is entered and he is tried. If he is found mute by visitation of God the jury next decides whether he is fit to plead; if so, he may plead by signs or writing; if not, he may be detained during the king's pleasure.

An old funeral custom in Great Britain, now almost obsolete, was the presence of attendants supplied by the undertaker and called mutes. Wearing voluminous black cloaks and crepe bands hanging from their hats, they stood outside the door of the house from which the corpse was to be brought, holding staves tied up with large black bows and streamers. These figures were survivals from ancient Roman funeral ceremonial at which black-garbed officials, called *lictors*, attended the undertaker or master of the ceremonies, called *designator*, and marched with him beside the corpse to the place of burning or burial outside the city.

In music, mute is the name of a mechanical device for softening or deadening the sound of an instrument. For stringed instruments

of the violin family the apparatus is of wood or ivory, and is affixed to the bridge; while on instruments such as the piano it is a pad applied by a pedal arrangement. In brass instruments it takes the form of a leather pad inserted in the bell. The words *con sordini*, or *muta*, indicate when the mute is to be employed, and *senza sordini* when it is to be discontinued.

In philology, mute is the term applied to letters which are not pronounced, such as b in *dumb*, and to consonants whose sound is abruptly checked by complete closure of the vocal organs. Mutes are voiced—b, d, g—and unvoiced—p, t, k.

**Mutilation** (Lat. *mutilare*, to lop off). In anthropology, a bodily disfigurement effected under social sanction. Practised throughout human history, it is an artifice having an amuletic, ornamental, or useful purpose. It is prompted by self-consciousness, desire for social distinction, magico-religious or hygienic considerations, or inexplicable tradition, and is often attended by rigid ceremonial observances. Distinguishable from the penal disfigurement of slaves, captives, and criminals, and the austerities of religious ascetics, it is usually intended to attract, not to repel, ranking as a mode of personal enhancement or decoration.

**MUTILATION CUSTOMS.** Skin-mutilations include shaving and eradication of hair, even to the eyebrows, raising of scars by cutting or burning, often as tribal badges, and puncturing of designs by needle-tattooing, especially in E. Asia. Amulets may be embedded in artificial warts. Chinese ascetics affect elongated fingernails.

Finger-joint amputation, attested by Palaeolithic cave-drawings, is widely practised in aboriginal Australia and S. Africa for mourning; in Mysore as a birth-custom and later symbolically; in Tonga and Damaraland in time of sickness; and among the Mandan Indians as an initiation rite. The former foot-compression of high-born Chinese women may be compared with the deformity occasioned by high-heeled shoes in Western civilization. Constriction of the waist or limbs by irremovable rings or bands, and breast elongation occur. The Nilotic Lango in E. Uganda pierce the navel for brass rings and bead ornaments.

Head-deformation has been widely practised since Neolithic times. Polynesian noses are often flattened. The upper ears may

have 13 punctures, as in India, or the lobes be punctured and distended until they rest upon the shoulders, as in the Solomon Islands. Melanesian noses, S. American and Nyasaland lips, and Eskimo cheeks may be pierced for plugging. Bongolips are distended, and Senegal lips artificially swollen. The tongue may be pierced, and some Saharan peoples excise the soft palate in infancy. Tooth-mutilation characterises chiefly the dark-skinned peoples. See Circumcision; Head-Deformation; Tooth-Mutilation.

**Mutiny** (Fr. *mutin*, rebellious). Collective insubordination of soldiers, sailors, or airmen. This offence is at all times punishable by death after conviction by court-martial. In Great Britain the Army Act provides for the redress of wrongs by enabling any officer or soldier as an individual to state his grievance to the Army Council, or to a general officer, but the combined complaint of several is never permissible. A soldier cannot be punished for availing himself of his privilege to complain, even if his complaint should be considered frivolous.

On the other hand, anything in the nature of a conspiracy to refuse service, or promote sedition, for any reason whatever, is deemed mutiny, and any person subject to military law who joins in it, or fails to use his utmost endeavours to suppress it, is culpable, even though the conspiracy should prove abortive. It should be noted that the term mutiny formerly included other acts of insubordination by a soldier, and thus the old Mutiny Act embraced most of the military offences now dealt with by the Army Act. The death penalty is hardly ever inflicted when refusal to obey an order is collective, or when the mutinous act is not performed in face of the enemy. See Army; Army Act; Mutiny Act.

**Mutiny Act.** Law originally passed in England in 1689 to punish insubordinate soldiers and deserters from the army by a military tribunal. The need for this became evident when 800 men who had enlisted to serve James II refused to embark for Holland at the bidding of William III. The duration of the Act was limited to seven months, but it was re-enacted every year with few intervals down to 1878, when its provisions were embodied in the Army Discipline and Regulation Act of 1879.

The Mutiny Act operated only in respect of troops at home, since articles of war were issued by the



crown to govern troops on active service or otherwise employed overseas. But in 1803 it became the legal authority for making articles of war, which had from Tudor times, and even earlier, been regarded solely as a prerogative of the crown, to be exercised only in time of war. As the law of the land could not be set aside in time of peace, the only help which parliament afforded the military authorities in maintaining discipline before 1689 was to make desertion punishable before a civil tribunal as a felony, apparently on the theory that a deserter had made away with a military equipment furnished at the cost of his captain. The Mutiny Act was therefore the beginning of legislation which recognized that the army in peace as in war required a special disciplinary code.

**Mutsu-hito** (1852-1912). Emperor of Japan. Born at Kyoto, Nov. 3, 1852, he succeeded his father, Osahito, in 1867, coming to the throne at a critical time in the history of Japan. The country had just been opened up to foreigners, and among the conservative element there was considerable discontent. Mutsu-hito favoured Western ideas and cleared the way for their introduction by various measures. He abolished the shogunate, and in 1869 moved his capital from Kyoto to Yeddo, which he renamed Tokyo. Railways were introduced in 1872, the European calendar came into force, and the study of English became general. Victorious wars with China, 1894, and Russia, 1904-05, strengthened his power, which was consolidated in 1910 by his alliance with Great Britain. He died in Tokyo, July 29, 1912. See Japan.

**Mutton** (late Lat. *multo*, sheep). Flesh of sheep. It contains less protein and more fat than beef. The breeds of sheep for mutton production include Lincoln, Leicester, Border Leicester, Scotch blackface, Shropshire, South Devon, and Welsh, together with crosses from these breeds. Immense quantities of frozen and chilled mutton are imported into the U.K., especially from New Zealand and Australia.

**Muttra** OR MATHURA. District and city of India in Agra division, Uttar Union. The dist. is situated on both sides of the Jumna, and grows wheat, barley, millet, and gram. Three-quarters of the area is tilled, and one-quarter is irrigated, rainfall being only 25 ins. per annum. Area 1,447 sq. m. Pop. (1951) 912,264.

The city, the reputed birth-place of Krishna, is an ancient sacred city on the Jumna and an important rly. junction. It has been inhabited since 600 B.C., and in the Buddhist era contained 20 monasteries with 3,000 monks. Among the fine buildings are the Jama Masjid, 1662, and the mosque of Aurungzebe, 1669. The Curzon museum of archaeology was opened in 1933. Pop. (1951) 105,773.

**Muybridge, EADWEARD** (1830-1904). British photographer. Born at Kingston-upon-Thames, his original name being Edward James Muggeridge, he emigrated to the U.S.A. and became director of photographic surveys. His first attempt at depicting motion by photography was in 1870, when he took a series of photographs of trotting horses and demonstrated that the conventional idea of trotting was incorrect. In 1881 he invented the zoopraxiscope, the forerunner of the cinematograph. He made photographs of animals in motion, upon which he published works which have become standard: *The Horse in Motion*, 1878; *Animal Locomotion*, 11 vols., 3rd ed. 1907; *The Human Figure in Motion*, 3rd ed. 1907. These works contain over 100,000 motion photographs. See Cinematography.

**Muzaffar-ed-Din** (1853-1907). Shah of Persia. Born March 25, 1853, he succeeded his father, Nasr-ed-Din, in 1896. His extravagant tastes forced him to raise loans from Russia, 1898-1900, thereby rousing suspicion of Russian motives in Great Britain.



Muzaffar-ed-Din,  
Shah of Persia

He visited St. Petersburg and Paris in 1900. In 1902 he was entertained in England by Edward VII, and received the order of the Garter. Continued maladministration and waste stirred up discontent until he was forced to grant a constitution in 1906. He died at Teheran, Jan. 8, 1907. See Persia: History.

**Muzaffargarh.** District and town of West Pakistan, in the Multan division. The dist. is situated in the S., with the Indus on the W. and the Chenab and Panjnad on the E., and terminates at the confluence of the Indus and Panjnad. The annual rainfall is 6 ins. Wheat is grown upon irrigated or undated land. The town stands on the right bank of the Chenab,

where the rly. crosses the river, and has grown round a fort built by Nawab Muzaffar Khan. Area, dist., 5,605 sq. m. Pop. dist., 712,849; town, 5,000.

**Muzaffarnagar.** District and town of India, in the Meerut division of the Uttar Union. The dist. lies between the Ganges and Jumna N. of Meerut dist. Wheat and barley are the chief crops. The annual rainfall is 30 ins. Area 1,682 sq. m. Pop. (1951) 1,221,768.

The town is situated near the middle of the dist. and has rly. connexion with Meerut and Delhi. It was founded by Muzaffar Khan Khanjahan about 1633. Pop. (est.) 18,000.

**Muzaffarpur.** Dist. and town of India, in the Tirhut division of Bihar state. The dist. lies N. of the Ganges, and is mainly a flat alluvial plain drained by the Gandak rivers. Its area is 3,025 sq. m. The only limitation of human settlement is the marshes, most of which represent deserted river beds, for none of the rivers of the plain is here stable. Most of the district contains over 1,000 people per sq. m., and about three-quarters of it is tilled. More than half the area yields two crops a year, chiefly rice and pulses. The town, built near a deserted bed of the Little Gandak river, is the divisional as well as the district headquarters, and was a centre of the indigo industry. Pop. (1951) dist., 3,520,739; town, 73,594.

**Muzzle.** Properly and originally the snout, i.e. the jaw and mouth of an animal. It is also used by analogy for the mouth of a gun, and for the covering placed over the mouths of dogs or other animals to prevent them, when necessary, from eating or biting. See Muzzling Order.

**Muzzle Blast.** Term in ballistics (*q.v.*) to denote the rush of propellant gases past a projectile at the instant its base leaves the muzzle of a gun, rifle, or other firing-piece. About  $\frac{1}{4}$  of the total energy of the explosion when a round is fired in the breach is wasted in the form of muzzle blast;  $\frac{1}{4}$  is absorbed in heating the various parts of the weapon; and only  $\frac{1}{4}$  is kinetic energy which propels the projectile.

**Muzzle Energy.** Kinetic energy of the propulsion and rotation of a projectile at the instant it leaves the barrel of a firing-piece on discharge. The energy generated by the explosion of the charge in a Lee Enfield rifle is 7,312.5 ft.-lb., of which 2,333 ft.-lb. is muzzle energy.

**Muzzle Velocity.** The speed of a firearm projectile at the instant it leaves the muzzle of the barrel. It is the maximum velocity of the projectile during its flight from barrel to target; thereafter the velocity of the projectile rapidly drops as initial velocity (*q.v.*) is expended and air resistance increases. The muzzle velocity of the British standard infantry rifle is 2,400 ft. per sec. It is considerably higher for large-calibre artillery, particularly A.A. artillery.

**Muzzling Order.** A measure adopted by public authority in various countries to stamp out rabies (*q.v.*). Although other animals are liable to the disease, dogs are its principal victims, and experience has shown that the best means of extinguishing it is compulsory muzzling within large districts, and the quarantining of all imported dogs, or absolute exclusion. In Great Britain the method was first tried systematically in 1897. In 1900 the order was rescinded, no case having occurred throughout the country for six months. In consequence of a recurrence of rabies in Cornwall and Devon, the muzzling order was reimposed for a time over certain districts in 1919.

**M.V.D.** Political police of the U.S.S.R., administered by the ministry of the interior, the Russian name for which is abbreviated to M.V.D. Earlier names of the organization, based on earlier names of the same govt. dept., were Cheka, OGPU, N.K.V.D. See OGPU.

**Mweru** or **MOERO.** Lake of Central Africa. It lies W. of Lake Tanganyika and between the Belgian Congo and N.E. Rhodesia. It is 68 m. long and has an average breadth of 24 m. It is fed by the Luapula river. To the E. of the lake is the Mweru Marsh game preserve, one of the chief breeding grounds of the elephant. The lake, which is navigated by steam launches, was discovered by Livingstone in 1867. Marshes for 30 m. from the S. end indicate a greater extent in past years, and certain fish with amphibious habits, a relic of the Silurian period, attest the great geological age of the lake.

**Myall.** Australian tree, one of the acacias. There are two kinds, one of which resembles the weeping willow. Its wood is much used for making tobacco pipes and handles for whips.

**Myasthenia Gravis.** A rare disease of the muscles. It is characterised by extreme fatiguability, which goes on to paralysis. Muscles supplied by the cranial nerves

are most commonly affected. The cause is unknown, nor is the exact nature of the defect understood. Normal transmission of impulses from the motor nerves to the voluntary muscles seems to depend upon the liberation at the ending of the nerves of acetylcholine. In this condition that subtle chemical substance is probably not elaborated, or is even destroyed. The condition may end fatally in from one to three years, or may run on for 20 years. Treatment consists in giving physostigmine, the synthetic form of which is prostigmine; removal of the thymus gland sometimes effects dramatic improvement.

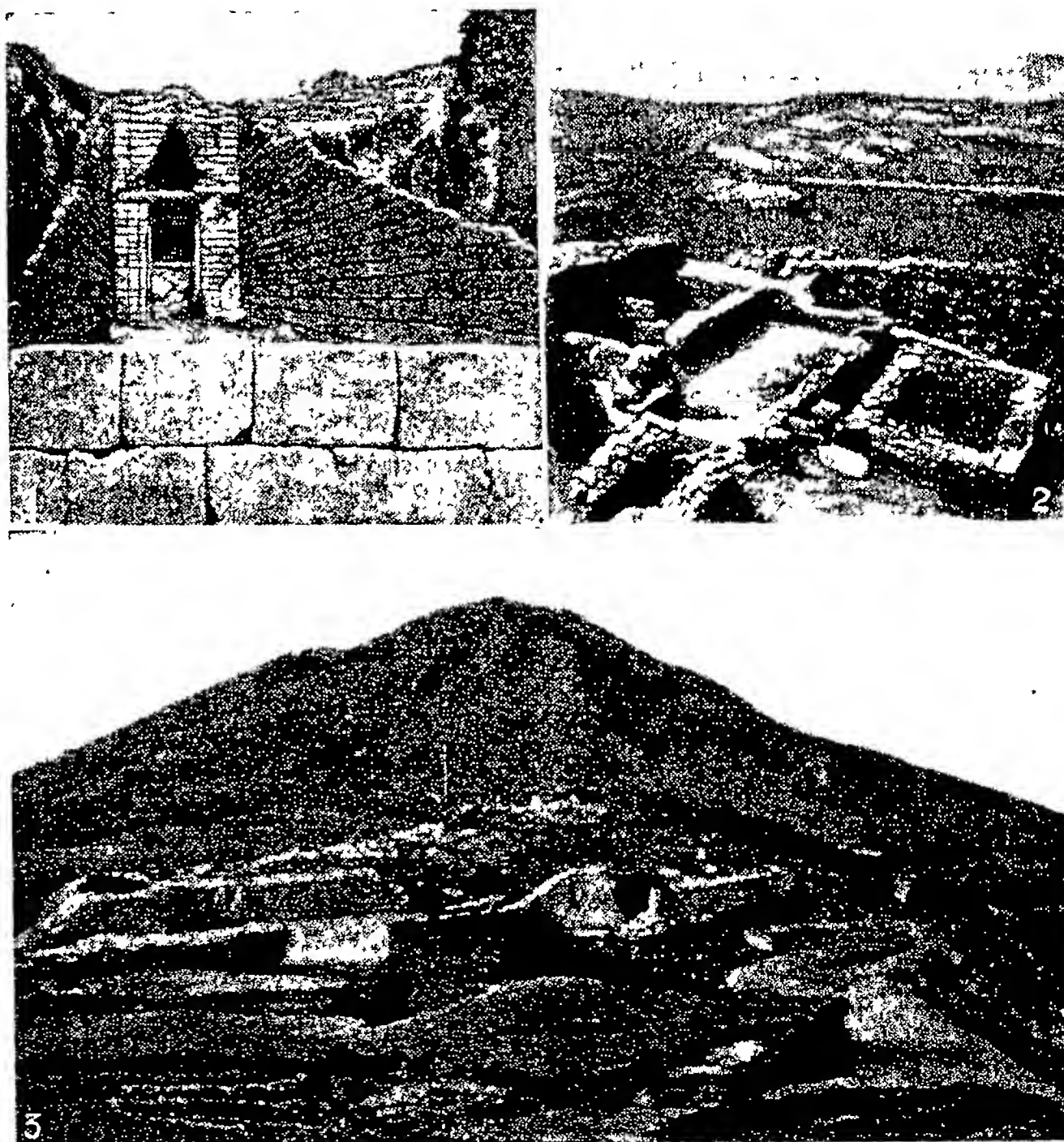
**Myaung-Mya.** District and town of Burma, in the Irawadi division. The dist. is on the W. side of the great delta, and has an annual rainfall of 100 ins. Rice is the only crop. The town is a progressive fishery and trading centre and small port. Area, 2,642 sq. m. Pop., dist., 488,031; town, 8,250.

**Mycalē.** Classical name of a mountain of Asiatic Turkey, now known as the Samsun Dag. Famous for the great naval victory the Greeks won over the Persians in its neighbourhood in 479 B.C.,

it stands on the W. coast, opposite the island of Samos. The battle ended Persian rule in Ionia.

**Mycelium.** Term used in botany for the branching system of fine threads which constitute the vegetative body of most fungi. The threads or hyphae have tubular non-living walls containing cytoplasm and nuclei. In basidiomycetes and the ascomycetes, partitions (septa) cross the hyphae at intervals separating the protoplast into parts which may contain one or several nuclei each according to the type of fungus. In phycomycetes, septa occur typically only to cut off reproductive organs and damaged or senile parts of the hyphae, which, of many soil fungi, grow adpressed in bundles (rhizomorphs).

**Mycenae.** Ancient Greek city of Argolis in Peloponnesus, capital of Agamemnon, overlord of the Achaeans of the Iliad. Its citadel or acropolis was occupied by Greeks in the Middle Bronze age, and c. 1600 B.C. it was ruled by a rich dynasty whose rock-hewn tombs, the famous shaft-graves, were excavated by Schliemann in 1876. They contained gold and silver ornaments, including gold masks, and arms,



Mycenae. Excavations in the ruins of the ancient Greek city. 1. Treasury of Clytemnestra. 2. Part of a large house, built about 1400 B.C. 3. General view from the west, with the famous Lion Gate in the distance



vases, and utensils. Mycenae was closely connected with Crete and commanded the trade route from the Aegean to northern lands. The quantity of Baltic amber found in its graves shows the widespread nature of its trade. Its greatest prosperity was reached about 1400, when it took the place of Cnossus as the leading Aegean power. The palace, the cyclopean walls of the Acropolis with their Lion Gate, and the domed tombs of beehive shape, chief among them the Treasury of Atreus, belong to this period. Excavations during the 1950s added much to knowledge of Mycenae.

The tradition of the siege of Troy, believed to have taken place about 1200 B.C., probably represents some great struggle of the final phase of the Mycenaean kingdom. The Iron Age then began in Greece, and about 1000 the Dorian invaders arrived from the north. Mycenae fell and its palaces were burned, but it lived on as a small city state. Argos now held first place in the region, and the Argives destroyed Mycenae in 468 B.C. It was rebuilt, but was of no importance save for the ruins visited by Greek and Roman tourists.

**Mycetozoa** OR MYXOMYCETES. Class of organisms variously regarded as low forms of animals (Protozoa), and as slime-fungi. They live in rotten wood, decaying leaves, and similar organic waste. Beginning life as microscopic spores, they rapidly become, in moisture, amoeba-like swarm-cells that glide through the decayed material, and feed upon bacteria by enveloping them in their jelly-like substance. They multiply in this stage by division; and later vast numbers unite into a cream-like mass (*plasmodium*) that flows out to the exterior of the leaf or tree-stump.

In the swarm-cell state they avoid the light, but the plasmodium is attracted to it. After a few hours of the flowing movements, the plasmodium invests itself in a firm crust, beneath which it breaks up into millions of microscopic spores again, lying among the meshes of a network of delicate threads (*capillitium*), some of the latter bearing knots of calcium carbonate. The spore-containing crust (*sporangia*) may be flat or cushion-shaped; or cylindrical or globular, mounted upon a stalk. These are the more interesting to observe: from the creamy plasmodium a number of hair-like growths extend vertically, and up these creeps a portion of the cream,

arranges itself as a cylinder or a globe, and then develops the hard crust, which may be black, brown,



Mycetozoa. Specimens of organisms occupying a doubtful position between the animal and vegetable worlds. Top, *Trichia botrytis*. Left centre, *Brefeldia maxima*, capillitium and spores. Right centre, *Mucilago spongiosa*. Bottom, *Stegomyces fusca*, flowing plasmodium

red, or yellow according to species. Some of these are of beautiful form.

Several hundred species are known from all but the driest and coldest parts of the earth, about 200 species being British. In certain phases of their life-history they appear to be animals, in others plants. The majority of naturalists follow De Bary, who declared them to be "outside the pale of botany." See Protozoa; consult Monograph of the Mycetozoa, A. Lister, 1911.

**Mycology** (Gr. *mykēs*, fungus; *logos*, discourse). Department of botany dealing with fungi. See Fungus; Mould. For the three great divisions of the fungi see Ascomycetes; Basidiomycetes; Phycomycetes. For the drugs produced by fungi see Ergot; Penicillin.

**Mycorrhiza**. Originally structures formed by the association of the mycelium of a fungus and the root of a higher plant. Other organs were later found to have fungus associates and the meaning was extended to include all such, except when algae are concerned.

Two types of mycorrhiza are commonly distinguished: ectotrophic, in which the fungus is outside the higher plant tissues; and endotrophic, in which the fungus is to be found largely within the higher plant. The

former is the type associated with forest trees. The association probably arises as an attempt by the fungus to parasitise the tree and under unfavourable conditions the roots suffer damage. From the fact that the fructifications of certain fungi usually appear under certain trees, e.g. *Amanita muscaria* under birch; *Russula fragilis* and *Boletus edulis* in pine woods, it would seem possible that they cannot be formed unless association with a suitable root has been established. Sometimes the tree may benefit from the association, as a result of the fungus passing on water, salts, and even organic matter absorbed from the soil.

Endotrophic mycorrhiza is common in herbaceous plants. Fungus hyphae occur casually in the roots of many perennial flowering plants and vascular cryptogams. They grow parasitically in the outer tissues. Deeper in, their progress seems to be arrested and branched tufts of hyphae are formed which are later digested by the host cells to leave rounded residues. With many orchids, Ericaceous plants, and prothalli of Lycopodium, to name a few examples, the mycorrhizal association is undoubtedly mutually advantageous. The fungus has access to the carbohydrates synthesised by the green plant, and it may pay for them with nitrogenous material derived from the soil or alternatively made by itself, for *Phoma* is known capable of fixing atmospheric nitrogen (see Nitrogen Cycle). Nevertheless the association is delicately balanced. Should the fungus be too vigorous it kills the seedlings: if the fungus is weakened as occurs in chalky soils, it dies and so, for want of it, does the host. The non-green Japanese orchid, *Gastrodia elata* exhibits dependence on *Armillaria mellea* in such an extreme manner that it can only be considered as parasitic on this fungus. The orchid has a tuberous rhizome as its only vegetative organ. This produces new tubers at the ends of its branches. When isolated from the fungus the orchid fails to flower, its new tubers are successively smaller until too weak to produce a new crop, and the plant dies.



Sir Hugh Myddelton, English capitalist

**Myddelton**, Sir Hugh (c. 1560-1631). English cap-

alist. Born at Galch Hill, Denbigh, he came to London and became a goldsmith and banker in Basinghall Street. Profitable ventures in the New World enabled him to contract with the corporation of London for making a river to supply the city with water from Ware, 1609. This he successfully executed, but nearly ruined himself in the undertaking. The New River was opened in 1613, and Myddelton was made a baronet in 1622. M.P. for his native county 1603-28, he died Dec. 10, 1631.

**Mydriatics.** Drugs causing the pupil of the eye to dilate. Those most often used are atropine and homatropine. Drugs which contract the pupil are called myotics.

**Myelitis** (Gr. *myelos*, marrow). Inflammation of the spinal cord. Acute myelitis may be due to pyogenic infection after fracture or injury of the spine, or may be a complication of severe infectious diseases, such as typhus and smallpox. The condition may also arise from extension of disease of the vertebrae, such as caries, or occur in the course of syphilis. The onset of acute diffuse myelitis may be marked by rigors and rise of temperature. Paralysis rapidly develops, first in the legs, and in the arms, if the upper part of the cord becomes involved. The muscles waste rapidly, and delirium and high fever terminate in death. In the variety of the disease known as poliomyelitis (infantile paralysis), nerve cells in the grey matter of the cord are destroyed. Treatment resembles that for meningitis (*q.v.*). When the condition is chronic, massage and electricity may improve the tone of muscles.

**Myers, CHARLES SAMUEL** (1873-1946). British psychologist. Born March 13, 1873, he attended the City of London school; Caius College, Cambridge; and St. Bartholomew's hospital. During 1906-09 he was professor of psychology at King's College, London. It is largely due to Myers's insistence that the study of individual psychology is recognized as important in the smooth conduct of businesses and the armed forces. He was consulting psychologist to British armies in France during the First Great War; and when the committee on personnel selection was set up by the War office in the Second Great War he was at once appointed. Created C.B.E. in 1919, Myers died Oct. 12, 1946. He wrote *Business Rationalisation*, 1932; *A Psychologist's Point of View*, 1933; *Shell Shock in France*, 1914-18, 1940.

**Myers, FREDERIC WILLIAM HENRY** (1843-1901). British man of letters. He was born, Feb. 6, 1843, at Keswick, and educated at Cheltenham and Trinity, Cambridge. In 1872 he became an inspector of schools. Of his poems *The Renewal of Youth*, 1882, is probably his finest effort. Later he became interested in spiritualistic phenomena, and was an original member of the Society for Psychical Research. The results of his psychic studies are embodied notably in *Human Personality and its Survival of Bodily Death*, 1903. Myers died in Rome, Jan. 17, 1901. Before he died he agreed to make every effort to communicate with friends after death, and it is claimed that he did so.

**Myingyan.** Dist. and town of Burma, in the Meiktila division. The dist. is situated on the left bank within the curve of the Irawadi and N.E. of the Pegu Mts. Oilseeds are the chief crop. The town is a rly. terminus on the left bank of the Irawadi. In Japanese occupation since 1942. Myingyan was recaptured March 22, 1945, during the operations which cleared the Meiktila area. Area of dist., 3,107 sq. m. Pop. dist., 539,057; town, 28,700.

**Myitkyina.** District and town of the Kachin state, Burma. The town is situated on the upper Irawadi more than 250 m. N.N.E. of Mandalay, with which it is connected by rly., being a terminus on the right bank of the Irawadi, of which it is the limit of navigation. Myitkyina was occupied by Japanese forces on May 8, 1942, after its evacuation by Chinese troops. On May 17, 1944, American and Chinese troops, seized Myitkyina airfield and part of the town, but withdrew in the night from the latter. Although isolated, the Japanese in Myitkyina held out until Aug. 4. By the fall of Myitkyina the invaders lost their last important base in Upper Burma. Area of dist., 10,977 sq. m. Pop. dist., 298,323; town, 20,000. *Pron.* Mitchi-nah.

**Mylitta.** Goddess of Babylonian mythology, associated with love and fruitfulness. Herodotus records that her worship claimed special rites from every woman at some time in her life.

**Mylius Erichsen Land.** That part of N. Greenland lying S. of Heilprin Land, E. of Peary Land, and bounded N. and E. by Wandel Bay and Denmark Fjord, in lat. 80° to 82° N. It was named after the Danish explorer who penetrated here in 1906.

**Mylonite.** In geology, a rock which has been crushed by earth movements so as to lose its original structure. Intense crushing may have resulted in the mylonite becoming fused by heat. Typical examples are found on the Moine Thrust (*q.v.*) in N.W. Scotland.

**Mymensingh, MAIMANSINGH, OR NASIRABAD.** Town in the Mymensingh dist. of E. Bengal, Pakistan. On the right bank of the old channel of the Brahmaputra, it is a centre for traffic on the river in rice and jute. It has connexion by rly. with Dacca and Chittagong. Pop. 22,000.

**Mynn, ALFRED** (1807-61). English cricketer. Born at Goudhurst, Kent, Jan. 19, 1807, he joined the



Alfred Mynn,  
English cricketer

Harrietsham cricket club in 1825. He played at Lord's in 1832, and became one of the chief performers in the country. A stalwart of the Gentlemen, he helped in their victories over the Players between 1840-50, and played regularly for Kent almost up to his death on Nov. 1, 1861. As a fast round-arm bowler Mynn had no equal.

**Mynyddislwyn.** Urban dist. of Monmouthshire, England. It is 8 m. S.W. of Pontypool, and stands on the coalfield, its industries including the making of electric switch gear and confectionery. There are quarries in the neighbourhood. Pop. (1951) 14,434.

**Myocarditis** (Gr. *mys*, muscle; *kardia*, heart). Inflammation of the muscle substance of the heart associated with rheumatism, influenza, and fevers. *See* Heart.

**Myopia** (Gr. *myops*, short sighted). Short sight. It is an error of refraction most commonly due to abnormal elongation of the eyeball, with the result that parallel rays are brought to focus in front of the retina, and vision is accordingly indistinct. Only divergent rays are focused on the retina, and in consequence short-sighted persons find it necessary to hold an object closer to the eye than do normal persons. The error of refraction can be adjusted by wearing specially corrected spectacles or contact lenses fitted to bear directly against the eyeball. *See* Eye.

**Myosin.** Proteid produced by muscle plasma after death. The plasma separates into a serum and



a clot, the latter being myosin. It is this occurrence in the muscles of the body after death that causes the phenomenon known as rigor mortis (*q.v.*). Myosin is contained in brine used for pickling meat, and prepared from flesh after removing albuminoids.

**Myriapoda.** Class of the Arthropoda, which includes the centipedes and millipedes. They have long, segmented, cylindrical, or flattened bodies, and each segment is provided with paired limbs. The animals are noted for the great number of their legs. A great number of species are distributed over the tropical and temperate regions of the world. Great Britain has several, all small and harmless.



**Myricaceae.** Small family of shrubs and trees. Natives of Europe, Asia, S. Africa, and N. America, they have alternate and undivided leaves, often covered with a wax-secreting down. The male and female flowers

are distinct, in separate spikes, and without sepals or petals; the males consisting merely of stamens, and the females of the one-celled ovary and two thread-like styles. The fruit is compressed on two sides, and contains a single-seeded stone. The species yield fragrant wax, benzoic acid, and tannin. See Sweet Gale.

**Myrmidons.** In Greek legend, the Thessalian tribe of which Achilles was king. Achilles brought them to Troy, and withdrew them from the fighting when he quarrelled with Agamemnon. Their unqualified devotion to Achilles has caused the term myrmidon to express unquestioning obedience.

**Myrobalan** (*Phyllanthus emblica*). A tree of the family Euphorbiaceae, a native of India and Malaya. Its alternate leaves are slender and arranged in two ranks along the twigs. The small green flowers have the sexes separate and are clustered. The small, acid, fleshy fruit contains a hard nut with six seeds. Fruits are eaten raw, or preserved with sugar as a sweetmeat, while bark is used in tanning and dyeing. The wood is hard and damp-resisting.



Myrobalan Plum. Spray of foliage and fruit. Inset, single flowers

**Myrobalan Plum** or **CHERRY PLUM** (*Prunus cerasifera*). Shrub of the family Rosaceae. Its native region is uncertain, but is probably the Caucasus. The branches are not spiny; the leaves are elliptical, the flowers white, and the fruit round and red, with yellow flesh. This shrub is much used for making hedges.

**Myron** (fl. 5th century B.C.). Greek sculptor. Born at Eleutheræ in Boeotia, he was a pupil of Ageladas of Argos. Specially known as a worker in bronze, he chose for subjects athletes and animals. His chief characteristics were truthfulness to nature, and active rather than passive representation. His most famous works were the Discobolus, Ladas the Runner, a Satyr (probably Marsyas), and a bronze cow. The last was remarkable for epigrams inscribed upon the animal's body after the manner of the so-called statue of Pasquino at Rome. See Discobolus illus.; Greek Art; Pasquinade.

**Myrrh.** Gum resin obtained from the stem of *Commiphora myrrha*. This is a small tree with whitish-grey bark, from which the myrrh escapes in yellow oily drops, darkening in colour as they harden. The main sources of myrrh are Somaliland and Arabia, where it is gathered by natives and placed in goatskins which are brought down to the coast for shipment. The gum resin consists of a mixture of resin, gum, and from 3 to 8 p.c. of a volatile oil. The most important

medical use of myrrh today is as an aromatic stimulant mouthwash.

Myrrh was used in the East as a perfume and for embalming. It was one of the gifts made by the magi to the child Jesus Christ, and on this account the custom exists of offering gold, frankincense, and myrrh every year on the feast of the Epiphany. The offering is made on behalf of the British sovereign in the Chapel Royal, London. See Frankincense; Magi. *Pron. mer.*

**Myrtaceae.** Family of trees and shrubs, mostly natives of the tropical regions. They have undivided leaves, and flowers with four or five parted calyx and four or five petals. This vast family includes over 180 genera and about 2,800 species. Among well-known genera are *Eucalyptus* and *Myrtus*, of which the well-known myrtle (*M. communis*) of S. Europe serves as a type.

**Myrtle** (*Myrtus communis*). Evergreen shrub of the above family Myrtaceae, native of W. Asia, but long naturalised in S. Europe, whence it was introduced to Great Britain in 1507. It grows to a height of 10 ft., has shining oval opposite leaves, and fragrant white flowers largely used in perfumery. The purple berries also are fragrant; they are sweet and have a strong aromatic flavour. In the extreme S. of England the myrtle is hardy and can be grown out of doors; elsewhere it needs protection in winter. It may be grown from seeds or cuttings, taken in early summer, and grown in a

compost of sandy loam and leaf-mould. Myrtle wreaths were used among the ancients to crown the victors in athletic games.

**Mysia.** Ancient country of Asia Minor. Lying between the Aegean Sea, Propontia, Bithynia, and Lydia, it sometimes included the Troad.

The Mysia first appear in history when Mysia came under Croesus, king of Lydia, in the 6th century B.C. With the overthrow of the latter by the Persians, Mysia became part of the Persian empire, and after the death of Alexander the Great in 323 B.C., part of the kingdom of Syria. In 133 the country became part of the Roman empire.

**Mysore.** State of India. It is bordered by Goa and Bombay on the N., Andhra Union on the E., Kerala and Madras on the S., and



Myrtle. Foliage and flower spray of the evergreen shrub

has a coastline of about 150 m. on the Arabian Sea, backed by the Western Ghats. The capital is Bangalore. Area 72,730 sq. m. Pop. (est.) 19,401,500.

This state, formed in 1956, includes most of the former princely state; Coorg; part of Hyderabad; and some districts formerly in Bombay and Madras. It is drained by the upper waters of the Vistna, Tungabhadra, and Cauvery and their tributaries, and is in the main devoted to agriculture, rice, millets, wheat, pulses, ground nuts, and cotton being the chief crops. Textiles and paper are made and there are engineering and metal works, sugar refineries, and tanneries. Silk, sandalwood, and sandalwood oil are other products. Minerals include gold, iron ore, asbestos, chromite, manganese, and kaolin.

The princely state of Mysore occupied a triangle in the Deccan, area 29,500 sq. m. It was ruled 1760-99 by a Mahomedan usurper, Haider Ali, and his son Tip-poo. The British restored the former Hindu dynasty in 1799, took over the administration 1831-81, and set up a Hindu maharaja. Efficient administration gained for Mysore the name of the model state. At the 1947 partition it acceded to India.

**Mysore.** City of Mysore state. It lies near the Cauvery, 75 m. S.W. of Bangalore. Modern buildings include the palace of the maharaja, and there are textile, paper, sugar, and chemical factories. S.E. of the city is temple-crowned Chamundi Hill, 3,489 ft., with a colossal recumbent figure of the sacred bull Nandi.

The city was the capital of the former princely state of Mysore until 1610. It was then superseded by Seringapatam until 1799, when the court again moved to Mysore. Pop. (1951) 244,323.

**Mystery.** Term for a secret rite. The Greek word *mysteria* denoted rites performed in the presence of persons prepared by gradual initiation, under a bond of secrecy. They probably grew out of primitive ceremonial dances associated with the pre-Hellenic

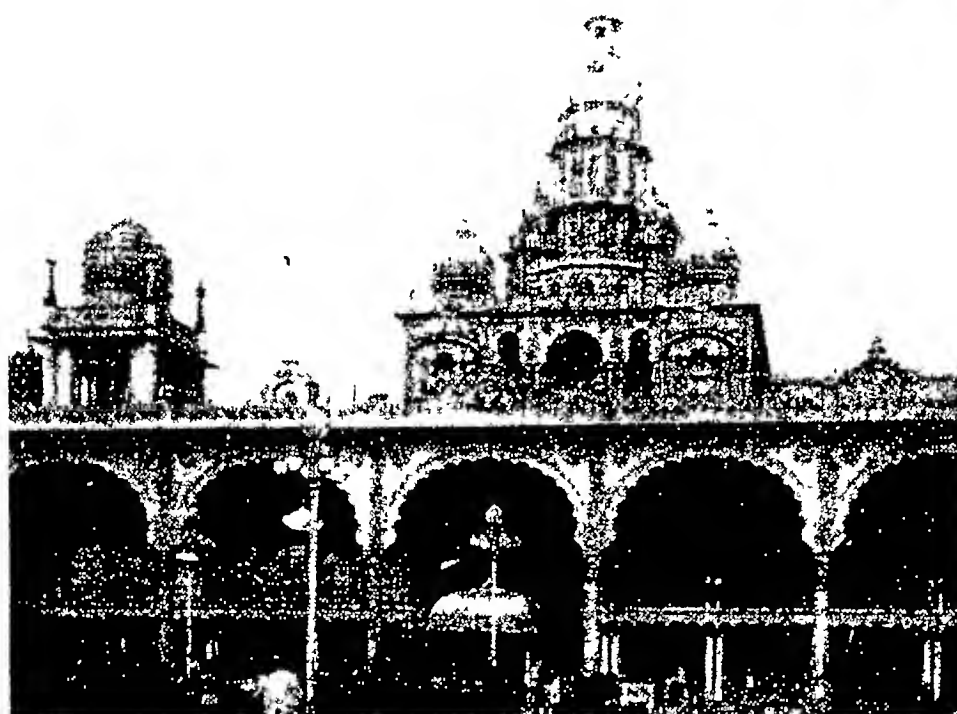
nature-worship of Thrace. Their chief centre was at Eleusis (*q.v.*).

A second group, perhaps Pelasgian, seems to have spread from Thrace to Lemnos and Boeotian Thebes. These mysteries were concerned with the deified shades called Cabiri, and included the ritual slaying of an animal victim. At Andania in Messenia the mysteries combined the veneration of Demeter with that of the Cabiri. These Cabirian rituals were often confused with two others, those of the Cretan Curetes, which were essentially puberty rites, and those of the Phrygian Corybantes, which were ceremonial dances symbolising death and burial as magical incentives to fertility.

A third group was concerned with Orpheus, himself perhaps of Thracian birth. With his veneration Greece associated the refinements of melody and poetry. In these Orphic mysteries the

with those of the Persian Mithras. All of them were for centuries engaged in a life-and-death struggle with the Christian faith.

In the N.T. the word mystery, as used by S. Paul, denoted the Divine plan, and there is reason to doubt whether the apostle referred directly to, or was personally familiar with, any of the mystery-



Mysore, South India. The principal entrance to the Maharaja's palace, one of the city's modern buildings. Top, the recumbent figure of Nandi, the sacred bull, on the top of Chamundi Hill

By courtesy of the High Commissioner for India

idea of recurrent death and resurrection was symbolised, Orpheus himself being in some degree considered as the founder and origin of all mysteries: and the ritual phenomena bore relationships to those which centred about the Egyptian worship of Isis and Serapis, and the Phrygian worship of Attis and Cybele. At the beginning of our era these mysteries were practised throughout the Greco-Roman world by the private members of secret societies, side by side

religions of his time. In a later age the early Fathers began to draw comparisons between Christian and pagan mysteries. But the resemblances with Christian practice observable in the later forms of the oriental cults prevalent in the Roman world, notably those of Isis and Mithras, are mainly explicable as imitations and not precursors of Christian institutions.

The religious mysteries already discussed are a special development of a social institution of widespread occurrence, and arose out of the emotional life of settled agricultural peoples. The main elements—purification, offering, procession, song, dance, drama, secret formula, and mechanical accessories—are so universal that these rituals must be deemed to have their roots in Neolithic culture. They sometimes occur as modes of admission into general society, as with primitive puberty-rites, and sometimes as devices for securing the local or specialised interests of artificial social groups. Thus the daubing of initiates with clay, characteristic of some Greek mysteries, is still practised in W. Africa, Guiana, Australia, Melanesia, and the Andamans, while the scope of the mystic bull-roarer (*q.v.*) is wider still. See Eleusinia;



Freemasonry; Initiation; consult St. Paul and the Mystery-Religions, H. A. A. Kennedy, 1913.

E. G. Harmer

**Mystery of Edwin Drood,** THE. Unfinished novel by Charles Dickens. It was to have been published first in twelve monthly parts, illustrated by S. Luke Fildes, but the author died, June 9, 1870, before completing the writing of the sixth part. The fragment was published in book form the same year, and is usually included in collected editions of the author's works, especially as it contains some of his most powerful and mature descriptive writing. So far as it stands, the story concerns the disappearance of young Edwin Drood, presumably murdered by his uncle John Jasper. Most of the action takes place in and near the cathedral precincts of Rochester, thinly disguised as Cloisterham, and the cathedral crypt and tower both appear to have been intended to figure prominently in the completed plot. Other scenes are laid in Staple Inn, London, and in an East-end opium den. The question of how the story was to end has aroused continuous controversy, and there are many opposing theories (see Drood Controversy). There have been several attempts to complete the book, also more than one stage version, notably that by J. Comyns Carr, presented by Tree in 1908. A film version (American) was shown in 1935.

**Mystery Play.** Type of religious drama in medieval Europe. It was so called either as representing mysteries of the faith, or more probably as being a ministry or craft. Medieval plays with biblical subjects are commonly called mysteries. The medieval drama was evolved from religious ritual. To the recitation of sacred narratives and antiphonal singing were added at the great church festivals quasi-dramatic dialogues and symbolical acts. By the 12th century the clergy and choirs performed dramas in French churches.

From the churches the dramas were transferred to the churchyards and to open spaces in towns, and when in 1210 the clergy were forbidden to act except in churches the performances were given by laymen. A great impetus was given to the movement by the institution in 1264 of the Corpus Christi festival on the Thursday after Trinity. The guilds in English and continental towns collaborated in producing cycles of plays representing sacred events from the

Creation to Doomsday. Comic relief was provided by Noah's wife, the shepherds of Bethlehem, and other stock characters.

Of the extant English cycles, the oldest are those of Chester (24 plays) and York (48), dating from about 1350. The 32 so-called Towneley mysteries were probably acted at or near Wakefield. The 42 Coventry plays seem to have been written for monks or friars. Some mystery plays in the Cornish language are also preserved. The religious drama lingered in England until the end of the 16th century.

In many continental countries examples of mystery plays abound. In Paris the representations were restricted to the confraternity of the Passion. The Scandinavian reformers encouraged the art, which was widely practised in Germany until its prohibition by the archbishop of Salzburg in 1779 was followed by that of other prelates of the empire, the inhabitants of Oberammergau alone obtaining permission to perform a passion play. Similar dramas are still acted in Spain, and at Bruges and Furnes in Belgium. See Drama; Miracle Play; Oberammergau.

**Mysticism** (Gr. *myein*, to close the eyes). Term originally used in connexion with the Greek mysteries. A mystic was one who had been initiated into the esoteric knowledge of divine things which the mysteries imparted to their converts. The word is now used in different senses, but in its technical meaning has been defined by Dean Inge as "the attempt to realize the presence of the living God in the soul and in nature, or more generally as the attempt to realize in thought and feeling the immanence of the temporal in the eternal and the eternal in the temporal." All mystics claim the power of immediate approach to God without the aid of external means.

Traces of mysticism are to be found in most religions. The spirit of mysticism has left its mark upon the Upanishads and the Hindu philosophical schools. In Islam it appears in Sufism. In Greece its origin may be traced to Plato, though its development was due to oriental influences connected with the Greek mysteries; it reached its climax in Neo-Platonism, especially in the writings of Plotinus.

Christianity has always been a favourable soil for the growth of mysticism. There are mystic elements in the N.T., particularly in the Johannine and Pauline litera-

ture. It was not, however, till the 5th century that the movement assumed large proportions. The writings of Pseudo-Dionysius are an attempt to transform Christianity under the influence of Neo-Platonism into mysticism pure and simple, and exercised a remarkable influence on Christian thought for several centuries.

The golden age of Christian mysticism falls within the period 1250-1500. It originated in a Pantheistic society which flourished in the 13th and 14th centuries, known as The Brethren of the Free Spirit. The watchword of this society was "All that is is God"; man and God were therefore always in intimate association; in fact, it was hardly possible to distinguish between them. Out of this society came Meister Eckhart (c. 1260-1329) one of the most remarkable of the German mystics. Eckhart's creed is pronouncedly pantheistic. "God is not the highest being," he says, for "he is the only being. Outside of God there is nothing but illusion and deception." Gradually mysticism separated itself from pantheism owing largely to the influence of John Ruysbroek (1293-1381), who has been called "the patriarch of the German mystics."

But the most influential mystic was John Tauler (c. 1300-1361), who succeeded in severing mysticism from all its pantheistic connexions, and bringing it into line with orthodox Christianity. Hitherto mysticism had been largely contemplative, and had shunned the practical life. Tauler showed that it was worthless unless it issued in consecration of character and life. Two societies were founded in Germany to popularise mysticism: (1) The Friends of God; (2) The Brethren of the Common Lot; both instrumental in preparing the way for the Reformation.

Thomas à Kempis was connected with the latter society, and though the *Imitatio Christi* cannot perhaps be called mystical in the technical sense of the term, it was written under the spell of the teaching of the mystics. Another product of the same school of thought was the *Theologia Germanica*, a book which had a unique influence at the time, and did almost as much as the *Imitatio Christi* for the recovery of spiritual religion in Germany. In the 16th century there was a powerful resurgence of mysticism in Roman Catholicism, particularly in Spain. The chief leaders of the movement were

S. Teresa, S. Juan, and Molinos, who carried to completion the work of S. Catherine of Siena. S. Catherine is the heroine of Baron von Hügel's book on mysticism, and his delineation of her character is the best exposition of the part which mysticism played in the devotional life of a devout and orthodox R.C. In France, mysticism found expression in the writings of Fénelon, Bossuet, Madame Guyon, and in Jansenism.

Roman Catholicism has always been more favourable to mysticism than has Protestantism, though the latter has by no means been untouched by its spirit. Boehme was the first great Protestant representative and from his writings William Law introduced mysticism into the English Church. It cannot be said to have been a power in English life, though it found strong advocates in the Cambridge Platonists. Quakerism, with its doctrine of the Inner Light, and Methodism with its insistence on the need of personal assurance of salvation, have points of affinity with mysticism, but the movement has never gripped the soul of England.

H. T. Andrews

*Bibliography.* Studies in Mystical Religion, R. M. Jones, 1909; Western Mysticism, C. Butler, 1922; Mysticism, E. Underhill, 10th ed. 1924; Psychology of Religious Mysticism, J. H. Leuba, 1925; Mysticism Old and New, A. Hopkinson, 1946.

**Mytens, DANIEL** (c. 1590–1642). Dutch painter, born at The Hague. He was influenced by Miereveldt and Rubens, came to London, and was a painter to Charles I, 1625–34. After Van Dyck's arrival he returned to Holland. His best works include Hudson, the Dwarf, with a dog in St. James's; Charles Howard, Earl of Nottingham, at Hampton Court; Charles I and Henrietta Maria, in Buckingham Palace.



Daniel Mytens,  
Dutch painter  
After Van Dyck

**Mythology.** The sacred stories of the various peoples of the world. Of these stories some relate to the Creation, and to divine or superhuman beings, their genealogies, activities, and adventures, whether they are believed to have originated the world, or mankind, or a particular tribe, rank, or family, or to superintend or take part in its

government, to be concerned in its well-being, to be hostile to it, or to lead a life of their own more or less apart from mortals.

Other stories relate to saints or heroes who have championed mankind or conferred benefits, who have undergone sufferings, made discoveries or inventions, or moulded the earth or its inhabitants into their present form. Among such stories are included those of the origin of death, the gift of fire, the deluge, the origin of beast and bird and tree, or their peculiarities, the organization of society, and of various institutions and customs. Many stories are aetiological, i.e. are told for the purpose of explaining these and other things; many, on the other hand, simply narrate what passes with an uncultured or half-cultured people for history. They are often connected with the worship of the gods, are told to explain the festivals, the ceremonies, the forms of their images, the position and furniture of their temples. In a word, they are sacred.

#### Myths Believed True

Unlike some non-sacred tales they are told as true, and wild and repulsive or impossible as they may be, they are or were once believed as facts. Another characteristic frequently, but not universally, present is that they are told only under special conditions, or at a certain time of year, or in connexion with certain rites, or to certain classes of persons, as the initiates into a cult or mystery. The scientific collection and criticism of these stories is called the science of mythology.

Myths take their rise low down in culture. The people has not yet been discovered so savage as to be destitute of myths. As culture advances, one incident after another becomes incredible to the growing intelligence, or repugnant to the more refined manners and morality of the community, but the old stories are still piously repeated by the backward classes or the priests of the local shrines. Again, the myths deemed derogatory to the divinities are denounced as lies or are interpreted as parables.

All these methods were tried in Greece. From Theagenes of Rhegium, and Metrodorus, in the 6th century B.C., down to Porphyry, and the latest age of paganism, the interpretation of the gods as physical phenomena was a favourite teaching. The 19th century explanation that myths are a disease of language, that seeks their explanation in questionable

etymologies and blunders of meaning, was anticipated by Plato.

Ultimately Christianity was victorious over paganism throughout the Roman empire. The official theory of the conquerors was that the heathen divinities were devils, and their stories lies, or a mere parody of the facts preserved in Holy Writ. At the revival of learning the cudgels were taken up by learned men on behalf of the Greek mythology. In fact, even during the Middle Ages, when the gods of the heathen had ceased to be serious competitors for belief with the denizens of the Christian Olympus, the theory that they were devils proportionately weakened, and men reverted to the explanation that their stories were parables, an explanation exploited for the purpose of Christian instruction in the *Gesta Romanorum* and other collections of tales. Bacon in *The Wisdom of the Ancients* after the Reformation attempted to revive this method of exposition; but its difficulties were such that no two interpreters agreed on the same explanation. More recently the Euhemeristic theory has been taken up by Herbert Spencer and Grant Allen. It is relevant to observe that, if every divinity were resolved into the shade of a human being, the problem of the origin and meaning of the mythical tales told everywhere on all sorts of themes would remain as puzzling as ever.

#### Philological Basis of Myths

The adherents of another school influential in the 19th century sought the answer to the question from philology. From Germany this method of interpretation spread wherever learned men expounded philology. In England Max Müller laid down "that the best solvent of the old riddles of mythology is to be found in an etymological analysis of the names of gods and goddesses, heroes, and heroines." Accordingly, he set himself to investigate and interpret the names. Philology as a scientific study was the result of acquaintance with Sanskrit, the eldest of the family of Aryan tongues, and in the Rigveda, the earliest Sanskrit literature, the philological school of mythologists thought they had found the explanation of the names and activities of the Aryan gods and the meaning of Aryan mythology.

Taking the Rigveda as his starting-point, Max Müller tells us: "The beginning of mythology came from a poetical and philosophical conception of nature and



its most prominent phenomena ; or, if poetry and philosophy combined may claim the name of religion, from a religious conception of the universe."

There are other elements taken up into it as it developed, but this is the beginning, the foundation. It is discovered by an examination of the names and epithets of the gods and of the deeds ascribed to them, and then by equating the names with names of gods and other words in the sister tongues. Many of these equations are contested ; The greater number are quite uncertain.

When the *veda* was carefully examined, the myths were practicably resolvable into two : that of

and Hindu myths were phenomena common to savage myths everywhere, and that they arose out of a condition of mind known to exist everywhere among savages. Andrew Lang recognizes two elements in all mythologies—"the factor we now regard as rational, and that which we moderns regard as irrational."

The savage and the ancestors of civilized people were on a par, which means that the ancestors of civilized people were once savages, as even the Greeks admitted. They endowed all external things with their own self-consciousness. The lower animals, trees, rocks, differed from men only in shape, save that they were often

vastly stronger and cleverer. The savage knew not the bounds of this cleverness ; he had no standard save imagination and fear by which to measure it. Naturally his belief extended to the grotesque and the impossible. Shape-shifting was accepted as a matter of course. The super-human personages of his imagination wore the shape of beasts either permanently or at will.

In the lower culture everywhere many men believe themselves possessed of extraordinary powers ; and all men, if

they do not believe it of themselves, believe it of some. Nay, they believe that, if not themselves magicians, at least they can by means of word and rite appropriate and exercise many extraordinary powers ; they can work their will by spell or amulet. The gods and heroes are endowed with the passions of men, with the powers attributed to at all events some men ; but both passions and powers are idealised and magnified indefinitely.

Not that these are the sole elements of which myths are made. They are merely the groundwork of mythology—they, and not hyperboles of poets, disease of language, misinterpretation of current expressions. Such causes play their part, but it is a small one. Other subordinate causes are distorted or imperfect recollections of facts,

the cluster of traditions about a great name, the complications of organized society, and the abiding aetiological impulse which we strive laboriously to satisfy by methodical scientific inquiry, but which in that child-like condition is stayed by a tale.

Lang's work had an immediate and profound effect. In Great Britain the philological theory of mythology was killed. The anthropological method, which explains mythology not by a disease of language, but by the universal characteristics of the mental condition of the lower culture, was accepted thenceforward by all serious students of the subject.

*Bibliography.* The Golden Bough, J. G. Frazer, new ed. 12 vols., 1907-15 ; Myths and Legends of the Celtic Race, T. W. Rolleston, 1911 ; Myth and Society in Attic Drama, A. M. Little, 1913 ; The Greeks and their Gods, W. K. Guthrie, 1930.

**Myxoedema** (*Gr. myxa*, mucus ; *oedema*, swelling). Disorder due to diminution or loss of function of the thyroid gland, more common among women than men. The patient becomes sluggish, lethargic, with coarsening of the hair and skin, and mucoid infiltration of the subcutaneous tissues. Failure of memory and sensitivity to cold are symptoms. Administration of thyroid extract is helpful.

**Myxomatosis.** Epidemic disease of rabbits. The name means a shiny tumour, and identifies a symptom. It was first discovered and its virus isolated by Giovanni Gamarelli at the Hygiene Institute, Montevideo, in 1896. The disease affects only rabbits and can be transmitted by contact, but transmission is generally by winged blood-sucking insects, particularly mosquitoes. The disease, which attacks the rabbit's nervous system and blood stream, causing tumours, blindness, and paralysis, is nearly 100 per cent. fatal, death supervening nine days after infection. In 1930 myxomatosis was deliberately introduced into Australia to counter the rabbit pest, and in three years many heavily-infested areas were completely cleared of the rodents. Similar results followed its introduction into Europe. The few rabbits surviving myxomatosis develop resistance to the disease.

**Myzostoma.** Small worm which occurs as an external parasite on various Crinoidea (*q.v.*). It is a disk-shaped animal without any trace of external segmentation and is usually classified in a family, Myzostomidae, of the phylum Annelida.

# GRECO-ROMAN MYTHOLOGY : PRINCIPAL DEITIES

Greek	Roman	Description
Zeus	Jupiter	Chief of the gods
Hera	Juno	Chief goddess, wife of the above
Pluto	Pluto or Dis	God of the underworld
Persephone	Proserpine	Queen of the underworld ; also goddess of spring
Athena	Minerva	Goddess of wisdom
Apollon	Apollo	Sun god ; also god of music and poetry
Artemis	Diana	Moon goddess, also goddess of the chase
Ares	Mars	God of war
Poseidon	Neptune	God of the sea
Hephaistos	Vulcan	Fire god
Aphrodite	Venus	Goddess of love and beauty
Demeter	Ceres	Goddess of the earth or harvest
Hestia	Vesta	Goddess of home
Hermes	Mercury	Messenger of the gods
Eros	Cupid	Boy god of love
Dionysus	Bacchus	God of wine
Chronos	Saturn	God of time
Eos	Aurora	Dawn goddess
Pan	Faunus	God of flocks and herds

## SCANDINAVIAN AND SAXON MYTHOLOGY

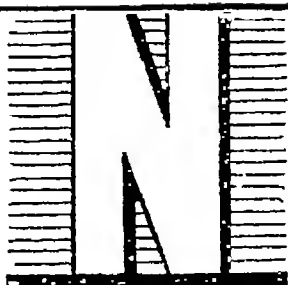
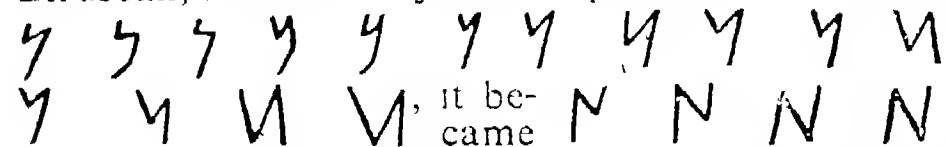
The chief Scandinavian gods were the Mysterious Three, led by Har (the mighty) ; the Aesir, led by Odin ; and the Vanir, led by Njord. The chief Saxon gods were Odin, or Woden, and Frea, corresponding in status to Jupiter and Juno ; Hertha, goddess of the earth ; Tiw, from whom Tuesday is named ; and Thor, god of war.

the conquest of the darkness of night, and that of the breaking of the prison of the rain.

But the time came when people could no longer accept the dogmatism of the philologists. It became incredible that the gods of the Aryan-speaking nations (and they were the only ones the philologists seriously attempted to explain) were due to "a disease of language," and one of the things that made it incredible was the wearisome monotone of the results.

Insurrection broke out first in Germany, while in Great Britain the researches and example of Tylor, Avebury, and MacLennan had prepared the way. Andrew Lang declared war in a number of essays, culminating in *Myth, Ritual and Religion*, 1887. He proved that the irrationalities of Greek

**N** is the fourteenth character of the English alphabet. In its long history it has held a position of close relationship with the letter *M*, both in shape and in the alphabetical order. Written in the North-Semitic, the early Greek, the Etruscan, and the early Latin alphabets as



when Greek began to be written from left to right; gradually it assumed shape **N** and eventually became **N** in the Latin alphabet, this form being retained ever since in all the Western alphabets.

The *n* minuscule—which developed slightly later than the *m* minuscule—arose because the medieval scribes wrote the letter without lifting the pen from the paper, a practice which came with the greater speed resulting from the development of handwriting.

**N** Fourteenth letter of the English and Latin alphabets, one of the nasal consonants. In English in the combination *ng* it has a marked nasal sound in words like *king*, *sing*, to some extent comparable with the sound heard in the French *mon*, *non*. Otherwise it is pronounced as in *can*, *neck*. It is mute at the end of words after *m*, as in *column*, *hymn*, *solemn*.

**Naaman**. Biblical character. A distinguished Syrian general, he was cured of leprosy by following the advice of the prophet Elisha, and thereupon adopted the Jewish religion (2 Kings 5).

**Naas**. Urban dist. and market town of Kildare, Irish Republic. It is served by state rly. and the Grand Canal. It stands near the Liffey, 20 m. S.W. of Dublin. Supposed to have been the capital of the kings of Leinster until after the English conquest it had



Naas arms

a castle and an abbey. Near is Punchestown (*q.v.*), which holds an annual steeplechase meeting. Market days, Mon. and Thurs. Pop. (1956) 38,755.

**Näås**. Village of Sweden, in the län of Göteborg and Bohus, 20 m. N.E. of the seaport of Göteborg (Gothenburg). It is the seat of a school of handicrafts.

**Nabadwip**. See *Nadia*.

**Nabeul**. City in the N.E. of Tunisia, renowned for its manufacture of perfumes and essences. It is situated on the Gulf of Hammamet in a fertile district producing oranges, lemons, and flowers grown for European markets. There is a rly. to Tunis.

**Nabha**. Town of the Punjab, India, capital of a former princely state of the same name. It was founded in 1755 by Hamir Singh.

The state, area 947 sq. m., pop. (1951) 25,676, was one of those which in 1948 formed the Patiala and E. Punjab states union, absorbed 1956 in Punjab. The area

has an annual rainfall of 18 ins. and grows food grains.

**Nablus** OR NABLOOS. Town of Jordan, 28 m. N. of Jerusalem. As Shechem, it is frequently mentioned in the O.T. Abimelech, the son of Gideon, destroyed the city; later it was rebuilt, and became the capital of Jeroboam, but was eventually deserted. Vespasian built a new town on the site and called it Flavia Neapolis, the modern names being a corruption of Neapolis. According to tradition Jacob was buried in Shechem, and Jacob's Well is shown near Gerizim. It was a holy city of the Samaritans, and the birthplace of Justin Martyr.

**Nabob** (Hindi *nawab*). Title given in the days of the Great Mogul to his viceroys, and generally to native rulers and persons of rank in India. In the 18th century nabob was used in England of one who ostentatiously spent a fortune made in the East.

**Nabonidus**. Last independent king of Babylon, 555–539 B.C. A usurper of priestly descent, he devoted himself to temple restoration and research. He spent a number of years' exile in Teima oasis, during which the government was left to his son Belshazzar (*q.v.*). The life of Nabonidus was spared when Babylon fell to Cyrus of Persia, 539 B.C.

**Nabopolassar**. Biblical version of the name Nabu-Apal-Utsur (meaning Nebo protect the son), king of ancient Babylonia, 626–605 B.C., the founder of the Chaldaean or Neo-Babylonian dynasty and destroyer of the Assyrians. General of the troops in revolt against their Assyrian masters, he drove the Assyrians out and in alliance with the Scythians and with the Medes pursued them into their own territory; in 612 Nineveh fell, and the empire was divided between Medes and Babylonians, the Babylonians taking Syria and Palestine. In the W., the ambitions of Necho were thwarted by the victory of Nabopolassar's son Nebuchadnezzar in 605 B.C. shortly before the old king's death.

**Naboth**. Jezreelite who owned a vineyard adjoining the palace of Ahab. When he refused to part with it, Jezebel secured it by causing Naboth and his sons to be executed on a false charge of blasphemy (1 Kings 21).

**Nacelle**. Aeronautical term for the engine housings of a multi-engined aircraft. They were usually situated in the leading edges of the wings. Formerly the term was used for the whole aircraft body.

**Nachtigal**, GUSTAV (1834–85). German explorer. Born Feb. 23, 1834, at Eichstedt, he qualified in medicine at Halle, and in 1869 was sent on a mission to the sultan of Bornu. Thence he explored Lake Chad and the Shari river, traversed Wadai, and made his way back to Cairo in 1874. Ten years later he was sent by the German govt. to the W. coast of Africa and explored those parts of Togoland and Cameroons which were eventually annexed by Germany. He died April 20, 1885.

**Nadia** OR NABADWIP. Dist. and town of W. Bengal, India. The town is on the Bhagirathi or Upper Hooghli, 55 m. N. of Calcutta. The dist. is a part of the Ganges delta, and the govt. maintains channels for steamer navigation in the Bhagirathi, Bhairab, Jalangi, and Matabhanga rivers. Rice and jute are grown. Area 2,879 sq. m. Pop. (1951) dist., 1,144,924; town, 56,298.

**Nadir**. In astronomy, the point of the celestial sphere directly beneath the observer, *i.e.* exactly opposite to the zenith.

**Nadir** (1688–1747). Shah of Persia. He was born in Khorassan, and at the age of 17 was captured by the Uzbek Tartars, escaping after four years' captivity. After many wild adventures, he entered the service of Tahmasp II, shah of Persia, in 1726 and deposed him in 1732, proclaiming himself regent for the minor Abbas III. He carried out successful campaigns against the Russians and the Turks, and on the death of Abbas, 1736, seized the Persian throne. Victorious against Afghanistan and



Bokhara, he invaded India, attacked the Great Mogul, seized Delhi in 1739, carried away the Koh-i-Noor diamond and the Peacock throne, and put over 30,000 of the inhabitants to the sword. He was assassinated at Fethabad, June 19-20, 1747.

**Nadir Shah** (1880-1933). King of Afghanistan. Born April 10, 1880, his full name being Mohammed Nadir Shah Ghazi, he defeated Habibullah in 1929, being proclaimed king, Oct. 16. He travelled extensively in Europe and endeavoured to introduce Western ideas into his country, but his attempts to effect national unity and modernise Afghanistan were cut short by his assassination. Nov. 8, 1933.

**Nadson**, SEMION YAKOVLEVITCH (1862-86). Russian poet. Born in St. Petersburg, of Jewish birth, at the age of 20 he published a volume of poems, which met with great popular success. In 1884 he joined a St. Petersburg weekly paper, but died two years later.

**Naegli**, KARL WILHELM VON (1817-91). Swiss botanist. He was born Mar. 26, 1817, and studied botany at Geneva and Zurich. He became professor of botany at Freiburg in 1852 and Munich in 1858. Specializing in the microscopic study of plants, he made many important discoveries, notably that of protoplasm and of the spermatozooids and antheridia of ferns. He died May 10, 1891.

**Naevius** (c. 269-204 B.C.). Roman dramatist and poet. A native of Campania, he was the predecessor of Ennius and an older contemporary of Plautus. He fought in the first Punic War, and afterwards settled in Rome. He persistently attacked the aristocracy, especially the Metelli, by whom he was banished to Utica, where he died. He was the author of tragedies and comedies, and of the first Roman epic poem, written in the old Saturnian metre, the subject being the Punic Wars.

**Naevus** (Lat., mole). Lesion of the skin often present at birth, due to an over-growth of the blood vessels of the skin causing the condition known popularly as port wine mark or strawberry mark. If they are small in area treatment is by carbon dioxide or electrolysis; if large in area, by skin grafting. Other types of mole may develop in later life and may need surgical treatment.

**Nafud**. Desert of Arabia. Situated in Nejd, it extends some

400 m. from W. to E. and has an average width of 200 m. Almost waterless, it is rich in pasture in any season of normal winter rainfall, the Beduins visiting it in the spring to graze their camels and flocks. It has a general altitude of almost 3,000 ft., and one of its most striking features is the pits found amongst the sand dunes. Their floor is generally of hard bare soil, and the steep walls are of pure sand, the largest being 330 ft. deep and 1½ m. wide.

**Naga**. Tribes of Indonesian stock occupying the hill ranges of E. Assam. They number about 300,000, and speak diverse Tibeto-Burman dialects. The head-hunting warrior is distinguished by cowry ornaments with human hair and tattooing. Cane girdles and anklets are also worn. There is much variation in political organization, but patrilineal exogamy is usual. Polygamy occurs among some (e.g. Sema, Chang), but monogamy is more usual. Agriculture is practised by all, rice and millet being the staple crops.

Eighteen British expeditions, 1832-87, were required for their subjugation; and military action against them was undertaken by the Indian government, 1955-56.

**Nagada**. Town of Egypt, on the Nile 16 m. below Luxor. Near by 3,000 prehistoric graves were excavated in 1894. They contained painted pottery, bone harpoons, stone vases, and mace heads, palettes and flint implements, representing two distinct cultures, called by some archaeologists Nagada I and Nagada II.

**Naga Hills**. District of Assam occupied by the primitive Naga tribes. It is a section of the mountainous tracts on the border of Burma. The capital is Kohima. Very little of the dist. is cultivated. Area 4,289 sq. m. Pop. (1951) 205,950. Consult Naga Path, 1950, by a white woman, Ursula Graham Bower, who lived among the Nagas for six years.

**Nagana**. Animal disease associated with the Tsetse Fly (*q.v.*).

**Nagano**. Town of Japan, in Honshu. It is situated towards the W. side of the island, near the confluence of the Sagami and the Shinanogawa. It is the capital of a prefecture famed for its sericulture and forestry. The town was formerly called Zenkoji, from the Buddhist temple which stands on an elevation in the city. The monastery dates from 664, but the buildings are modern; the chief images are reputed to have been

made by Buddha himself. The town is linked by rly. with Tokyo.

**Nagar**. See Bedmur.

**Nagasaki**. Seaport of Japan, on Kyushu island. It stands on a fine natural harbour on the W. side of the island, 3 m. from the open sea. It held the monopoly of European trade from the 16th century until 1859, when Japan was opened to foreign trade and towns more centrally situated superseded Nagasaki. The port has connexion by rly. and sea with other Japanese ports. Coal is mined in the neighbourhood. There are coke and briquette factories, ironworks, dockyards. Pop. (1955 est.) 299,800.

On Aug. 9, 1945, the second atomic bomb was dropped on the city by a U.S. aircraft, the first having devastated Hiroshima (*q.v.*) three days earlier. The centre of destruction was the industrial area in the Urakami valley, which was obliterated. The harbour and commercial area, nearly two miles distant, escaped with minor damage. Of Nagasaki's pop. of 212,000, 73,884 were killed and 78,796 injured. Consult We of Nagasaki, Takashi Nagai, Eng. trans. 1951.

**Nagioa**. Town of India, in the Bijnor dist. of Uttar Union. It is situated near the middle of the dist. on the rly. from Moradabad to Dehra. It manufactures cotton, cloth, and glass, and is noted for ebony carving. Pop. (1951) 27,947.

**Nagorno-Karabakh**. Autonomous region of Azerbaijan S.S.R., in the S.W. of the republic. About a third of its area, 1,700 sq. m., is covered by forests; cattle, sheep, mules, and silkworms are reared; cotton is grown and silk goods and wine are made. The capital is Stepanakert. Pop. (est.) 130,000.

**Nagoya**. City of Japan, in Honshu. It is in the S. of the fertile plain of Mino and Owari, and owes its importance to the Shogun stronghold built in 1610. S. of the city is Nagoya harbour, on the bay of Ise. Silk and cotton thread and fabrics are made, and the city was a pioneer in the clock industry. Atsuta Jingu is the second greatest Shinto shrine in Japan. Nagoya was bombed by U.S. aircraft on April 18, 1942, and on several occasions in 1944 and 1945. U.S. troops occupied the town in Aug. 1945. Pop. (1955 est.) 1,336,800.

**Nagpur**. Division and district of Bombay state India. The division consists of the Nagpur plain, sloping gently S. from the Satpura ranges and drained by the

Wainganga and Wardha, to the Prahita and Godavari. The dist. has a rainfall of 46 ins. Only a third of the land under cultivation is devoted to food grains, mainly wheat, most of the remainder being under cotton. Area, div., 27,294 sq. m.; dist., 3,836 sq. m. Pop. (1951) div., 7,607,038; dist., 1,234,556.

**Nagpur.** A city of Bombay, India, airport, headquarters of Nagpur district, and seat of a university founded in 1923. Formerly the Maratha capital of the Bonsla rajas, it lies between the Wardha and Wainganga rivers, close to the great cotton-growing area of the Deccan. Its importance increased when the direct rly. line from Bombay to Calcutta was made through it. Pop. (1951), 449,099.

**Nagy.** Magyar word for great. Formerly incorporated in the place names of many towns in the Austro-Hungarian empire, it has been dropped from some of them since their incorporation in other countries, e.g. Nagykikinda, Yugoslavia, became Kikinda. Nagyszombat, Czechoslovakia, became Trnava, and Nagyvarad, Rumania, became Oradea.

**Nagykanizsa.** Town of Hungary. It is situated to the S.W. of Lake Balaton on the main line rly. from Budapest, 143 m. to the N.E., to Trieste with a branch through Odenburg (Sopron) to Vienna. There are distilleries and tile works. Pop. 30,936.

**Nagykaroly.** Town of Rumania formerly in Hungary. The Rumanian form of the name is Careii Mari. It is 185 m. E.N.E. of Budapest, on the main line to Ruthenia, with a branch rly. connexion to the main towns of Transylvania. There are sawmills and textile factories. Pop. 16,000.

**Nagykörös.** Town of Hungary in the co. of Pest-Pilis-Solt-Kiskun. It is 56 m. by rly. S.E. of Budapest on the main line to Szeged, 10 m. N.N.E. of Kecskemét. Wheat, maize, and melons are grown, and cattle are reared. Pop. 28,600.

**Nahan.** Alternative name for Sirmoor (q.v.), former Indian state now in the Himachal union; also the name of the capital town.

**Nahas Pasha,** MUSTAFA EL (b. 1876). Egyptian politician. Educated at Cairo, he entered the legal profession, becoming a judge of the local courts. Turning his attention to politics, he became a member of the house of deputies in 1924, being president 1927-28. In 1927 he became chairman of the Wafd party, the leading nationalist party until the split in 1938,

and was notoriously anti-British. He was prime minister in 1928, 1930, 1936-37, 1942-44 (when he was also foreign minister), and 1950-52.

**Nahe.** River of Germany. A left bank tributary of the Rhine, it rises near Selbach in Birkenfeld and joins the main stream at Bingen. Its length is about 60 m., much of its course being between vine-clad hillsides, the picturesque scenery of which attracts large numbers of tourists.

**Nahua.** American Indian tribes, speaking the Nahuatl language, who dominated central Mexico and some areas farther S. at the time of the Spanish conquest. Several such tribes arrived in the Valley of Mexico in the 12th century, and after internecine struggles the Aztecs took the lead, their only serious rivals being the Texcocans. Many of their descendants survive, still speaking Nahuatl.

**Nahuel-Huapi** OR TIGER LAKE. Large lake of Argentina, in the territory of Neuquen, bordering that of Rio Negro. Situated in the Andes, at an alt. of 2,000 ft., it is 75 m. in length and 10 m. in breadth, with an area of 110 sq. m., and contains many islands. It is the source of the river Limay, the boundary of the territories of Neuquen and Rio Negro.

**Nahum.** One of the minor prophets. A native of Elkoah, probably in Galilee, he flourished about the 7th cent. B.C. His book consists of predictions of the fall of Nineveh, which took place 606 B.C. The reference to the capture of No-Amon (Thebes) by Ashurbanipal, king of Assyria, further shows that it must have been written later than 666 B.C.

**Naiadaceae.** Family of aquatic herbs once including *Aponogeton*, *Potamogeton*, and *Zostera*, but now comprising only the single genus *Najas*. Two species are found in fresh water in Great Britain. Their small unisexual flowers pollinate under water.

**Naiads** OR NAIADES. In Greek mythology, nymphs of rivers, brooks, springs, and fresh water generally. See Nymph.

**Naidu,** SARAJINI (1879-1949). Indian poet and politician. Born in Hyderabad state, Feb. 13, 1879, she was educated at King's College, London, and Girton College, Cambridge. She later published poetry in English which was translated into Indian languages, e.g. *The Golden Threshold*, *The Bird of Time*, and *The Broken Wing*. A friend of Gandhi, she worked for Indian independence,

lecturing on social, religious, and educational subjects. A member of the working committee of Indian National Congress and Women's movement, she was president of the Indian National Congress in 1925, and delegate to the London round table conference in 1931. Arrested as participant in the civil disobedience campaign in 1940 and 1942, she was governor of the United Provinces from 1947 until her death, March 2, 1949.

**Naihati.** Town of W. Bengal, India. It is situated on the left bank of the Hooghli, 24 m. above Calcutta. Pop. (1951) 55,313.

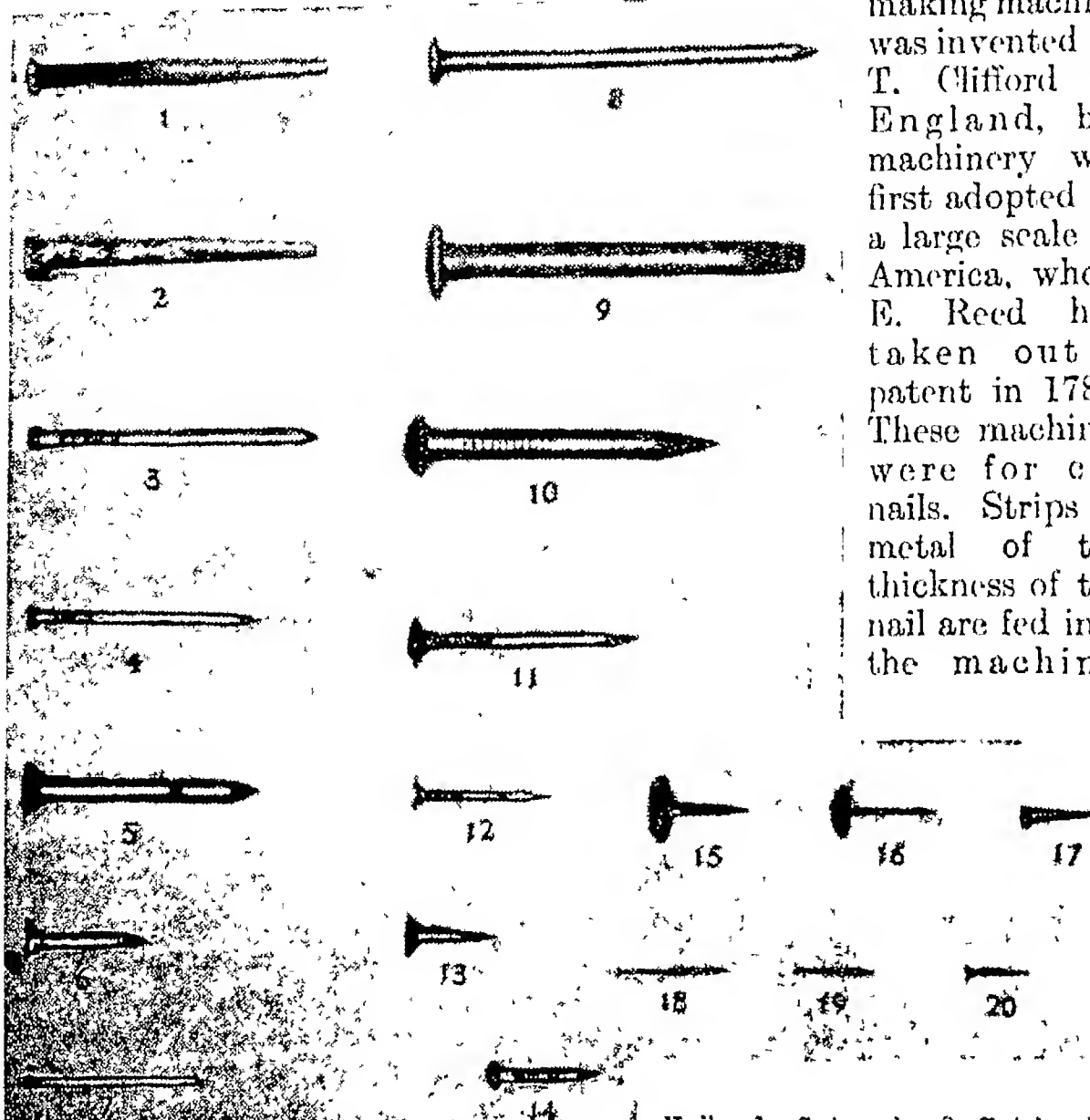
**Naik.** Non-commissioned officer in the armies of India and Pakistan, equivalent to corporal in the British army. Holders of similar rank in cavalry regiments are known as daffadars.

**Nail.** Metal spike, usually having a point and a broadened head, used for attaching wood or metal parts to wood. Tree-nails (or tre-nails) are hard wooden pegs for a similar purpose, used (e.g.) for oak, where metal nails would become corroded. Metal nails are made of iron (mild steel), brass, copper, zinc, and various alloys; those to resist corrosion are galvanised, tinned, or coated in other ways. Steel nails may be "brassed" or "coppered" to give a desired appearance, or to utilise the greater strength of the steel. Screwnails are twisted in the shank spirally so that when driven they rotate and are drawn into the wood.

Cut nails like 1 and 2 (illus. p. 5950) are stamped from plate of appropriate gauge. Wrought nails are formed by a forging process to give an enlarged or ornamental head. Large types of nail are cast. Wire nails, most extensively used today, are formed from wire of suitable shape and gauge by machine, being headed and pointed in a continuous operation. The full range extends from 10 ins. long by  $\frac{3}{8}$  in. diam. in the round variety (No. 8) down to  $\frac{1}{8}$  in. long and of diameters according to the S.W. Gauges 16, 17, and 18. Oval wire nails (No. 3) are made in 6 ins. long by 6 gauge down to  $\frac{1}{8}$  in. long by 20 gauge—the thickness mentioned being that of the narrowest section of the oval. Panel pins (No. 7) range from 2 ins. by 14 gauge to  $\frac{1}{8}$  in. by 18 and 19 gauge. Wire nails and cut nails for building purposes are described in the British Standard Specification No. 1202: 1944.

Nails used to be distinguished as twopenny, 1 in. long; threepenny,





Nail. 1. Cut nail. 2. Cut brad or floor brad. 3. Oval wire nail. 4. Small ditto. 5. Wall nail. 6. Small clout nail. 7. Panel pin. 8. Round wire nail. 9. Galvanised chisel-pointed roof nail. 10. Bright roofing nail. 11. Brass-headed nail. 12. Lath nail. 13. Small stout tack. 14. Screw nail. 15. Drugget pin. 16. Chair nail. 17. Tinned tack. 18. Cigar-box pin. 19. Small pin. 20. Wire gimp pin

1½ ins. long; and fourpenny, 1½ ins. long. These denominations are still used in the U.S.A.

Until the end of the 18th century practically all nails were hand made, forged from nail rods by the blacksmith. The chief centre for nail-making was in Birmingham, and women and children were largely employed. In 1790 a nail-

making machine was invented by T. Clifford in England, but machinery was first adopted on a large scale in America, where E. Reed had taken out a patent in 1786. These machines were for cut nails. Strips of metal of the thickness of the nail are fed into the machine,

which automatically cuts the strips into the required lengths and shapes the heads to correct size. Wire or "French" nails did not come into general use until about a century later. After entering the machine the wire is led through straightening rolls, and is then gripped by a die which puts on the burrs which roughen the top part of the shank in some types; a cutter

closes in upon the shank at the pre-set length and shapes the point, while at the same time a heading die holds the opposite end to receive the blows of a hammer which forms the enlarged head. Finally a pusher breaks away the finished nail where it has been pointed. The output is about a thousand a minute.

**Nail.** Horny scaly growth at the ends of fingers and toes of human beings and some animals. The human nail consists of three parts: the extremity or apex; the opposite end or root, where it emerges from the flesh; and the

whitish part, termed the lunula, or half-moon. Nails are a special growth of the epidermis or skin tissue. In biology they are homologous with the hoof and claw of other animals. See Horn.

**Nail-Head Spar.** A variety of the mineral calcite (*q.v.*), so called on account of the crystalline form, a combination of the flat rhombhedron and prism.

**Nain.** Ancient town in Galilee, situated 6 m. S.E. of Nazareth, on the summit of Little Hermon, or the hill of Moreh. The ancient town was probably on its summit. It was the home of a youth whom Christ raised from the dead (Luke 7).

**Naini Tal.** District and town of the Uttar union, India, in the Kumaun division. The dist. is situated on the Himalayan slopes N. of Rampur State. The annual rainfall averages 67 ins. A 120-acre lake 6,410 ft. above sea level is a striking feature. It has sulphur springs. The peaks of China (8,568 ft.) and Deopatta (7,589 ft.) enhance the beauty of the scene. On Sept. 18, 1880, a disastrous landslide caused by torrential rain caused heavy loss of life; the day is still kept in memory of those who died in that calamity. Only a sixth of the area is cultivated. The town is a hill station reached by road from the rly. terminus at



Naini Tal, India. Town of the Uttar Union, long the summer administrative station of the United Provinces

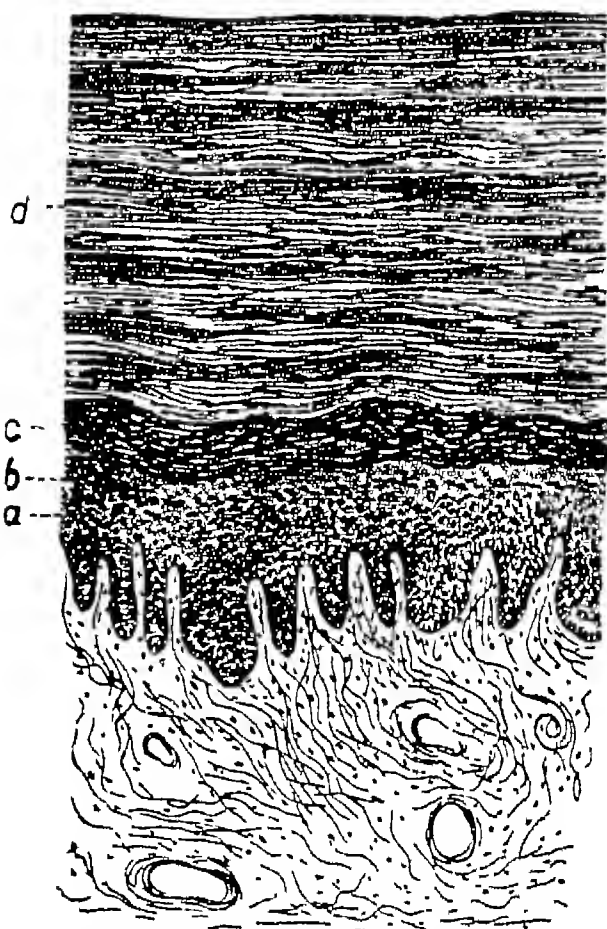
Ho'dwani. Elevation 6,410 ft. Area, 2,627 sq. m. Pop. (1951) dist., 335,414; town, 12,000.

**Nainsook** (Hind., pleasure of the eye). Soft muslin of Indian origin. Nainsooks are either plain or striped, the stripes running lengthways. In India they were sometimes made of silk. See Muslin.

**Nairn.** Royal and mun. burgh and watering-place of Nairnshire, Scotland, on the Moray Firth. It is also the county town.



Nairn seal



Nail. Vertical section through human nail and nail-bed. a, stratum malpighii, and, b, stratum granulosum, of nail-bed; c, deep layers of nail substance; d, superficial layers. Highly magnified

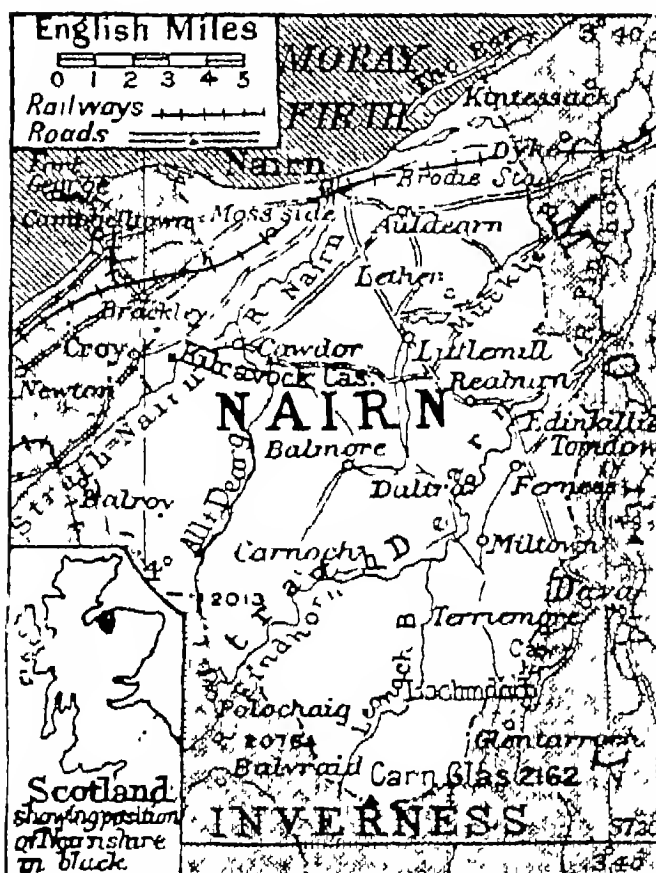
It stands where the Nairn falls into the Moray Firth, 15 m. by rly. from Inverness. It has a good harbour, golf links, and excellent bathing. Chief industries are fishing and fish-curing. Nairn (then Invernairn) was made a royal burgh in the 12th century. Pop. (1951) 4,700.

**Nairne, CAROLINA, BARONESS** (1766–1845). A Scottish ballad-writer. A member of a prominent

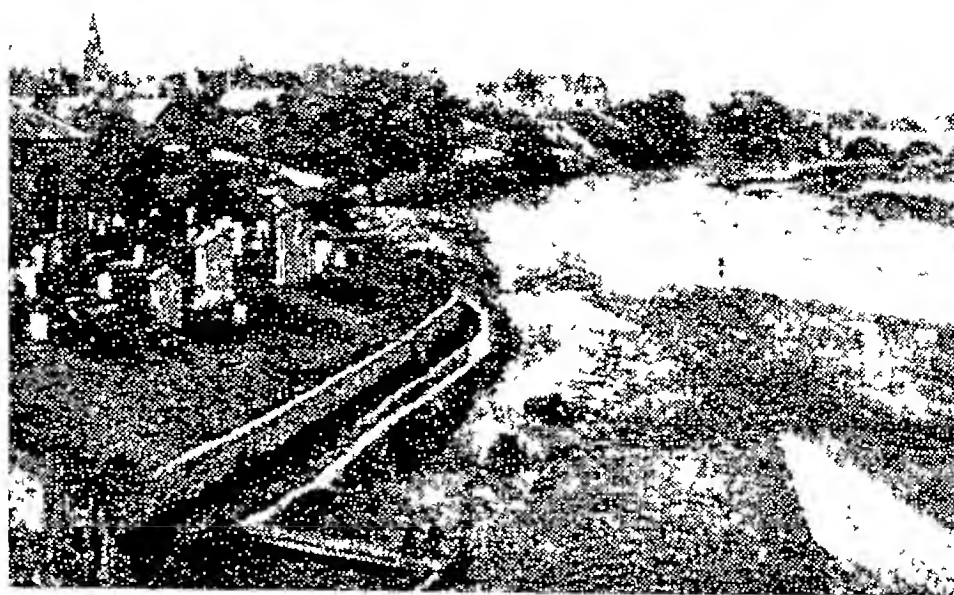


Baroness Nairne, Scottish ballad writer (1757–1830), to whom she bore one son, William (1808–37). Her beauty and charm won for her the name of The Flower of Strathearn. After her husband's death she lived in Ireland and on the Continent, and died at Gask, Oct. 26, 1845. She wrote nearly 100 songs, some of them adaptations of old favourites, among them The Land o' the Leal, Caller Herrin', and The Laird o' Cockpen. They were issued in volume form in 1846 as Lays from Strathearn. See Life and Songs of Lady Nairne, C. Rogers, 1869; Jacobite Lairds of Gask, K. Oliphant, 1870; Lady Nairne and her songs, G. Henderson, 1905; The Oliphants of Gask, Records of a Jacobite Family, M. E. Blair-Oliphant, 1910.

**Nairnshire.** Maritime county of Scotland. It has about 10 m. of coastline on the Moray Firth, and the surface rises towards the S., attaining an alt. of 2,162 ft. in Carn Glas. Its area is 163 sq. m. The



Nairnshire. Map of the Highland county south of Moray Firth



Nairn. General view of the town and banks of the Nairn from the north

chief rivers are the Findhorn and the Nairn. The county is an agricultural area, but much of the land is only suitable for sheep. Nairn is the county town, and in the shire are Cawdor and Kilravock with their castles, and Auldearn. In 1891 detached portions of Nairnshire were absorbed in the counties of Ross, Inverness, and Moray. In early times, Nairn was part of the district called Moray, and it has always had a close association with the shire of that name. It joins with Moray to form a co. constituency. Pop. est. 8,700. Consult History of Moray and Nairn, C. J. G. Rampini, 1897.

**Nairobi.** City of Kenya Colony, E. Africa, capital and centre of administration of the colony. It is situated on an elevated plateau, at a height of 5,475 ft., within easy reach of the Kikuyu and Limoru highlands. It was originally founded, 1899, as a rly. settlement, and still remains the chief rly. centre for Kenya and Uganda, being 327 m. from Mombasa, and 257 m. from Kisumu (Port Florence) on the Victoria Nyanza. It also has an important aerodrome and is the terminus of a motor road that crosses Uganda to Mongalla, Sudan.

The healthy and invigorating climate, due to its altitude, made Nairobi suitable for European settlement, in spite of its two rainy seasons; and it now has the largest European pop. of E. African towns. There are an Anglican cathedral, the McMillan memorial library opened in 1931, and a fine town hall, opened, with

the rebuilt law courts, in 1935. W. of the town is the cantonment of the King's African Rifles. In 1950 Nairobi was incorporated as a city by royal charter, the ceremony being performed, March 30, by the duke of Gloucester. Pop. (1954 est.) 186,000 of whom 18,000 were white.

**Naivasha.** Town and lake in Kenya Colony, E. Africa. It is included in the Nakuru district, which is extensively cultivated. Lake Naivasha is about 12 m. long by 9 m. broad. The hippopotamus is protected in the lake, which is also well stocked with black bass. The township on the E. of the lake is on the Uganda rly., 391 m. from



Nairobi, Kenya Colony. Government Road, an important thoroughfare in this capital city

Mombasa, and 64 m. N.W. of Nairobi. It is a holiday resort.

**Najibabad.** Town of the Uttar union, India, in the Bijnor district. It is situated in the N. of the district, and is a rly. junction on the route from Delhi to Dehra. Pop. 26,898.

**Nakhichevan.** Autonomous republic forming part of Azerbaijan S.S.R. Bordered S. and S.W. by Persia, and N. and E. by Armenia S.S.R., it was constituted in 1924. Area 2,100 sq. m. Pop. (est.) 160,000. The surface, part of the valley of the Araxes in the S.W., rises to 10,000 ft. in the E. The rly. line from Baku to Tbilisi (Tiflis) skirts the S.W. border, and sends a branch line into the interior. For many years on a trade route between Russia and Persia, it was annexed by Russia in 1828. Its capital, of the same



name, is situated 85 m. S.E. of Erivan, and is a centre for the manufacture of textiles, leather goods, pottery, wine, salt, and food products.

**Nakhichevan-on-Don.** Town of the R.S.F.S.R. It is situated on the Don and the Koslov-Rostov rly. about 6 m. N.E. of Rostov-on-Don. Candles, cotton goods, and bricks are the chief products. It was founded in 1780 by Armenian immigrants. Pop. (est.) 75,000.

**Nalchik.** Town of the R.S.F.S.R., capital of Kabardinia A.S.S.R. It is situated 150 m. W. of Grozny in the Caucasus. It was evacuated by the Russians on Nov. 2, 1942, in the face of heavy German pressure. Russian forces retook it Jan. 4, 1943.

**Nama** OR NAMAQUA. Division of the Hottentot people, mostly in Namaqualand, S.W. Africa protectorate. Numbering 14,000, they have preserved their type and speech more completely than the Korana division, who remained behind in the upper Orange basin. During 1881-1906 they were in incessant conflict either with the Herero, or with the Germans. They have been much affected by missionary, European, and Bantu influences, but remain for the most part pastoral.

**Namangan,** OR NAMANCHAN. A town of Uzbek S.S.R. It is in the valley of the Syr-Daria, 50 m. by rly. N.E. of Khokand. Considerable trade is carried on in cotton, fruit, hides, and sheep. In the neighbourhood are naphtha wells and coalbeds. Pop. 77,351.

**Namaqualand,** GREAT. Country in the S.W. Africa Protectorate, formerly German S.W. Africa. Extending from the Orange River to Damaraland, it is mainly a sterile desert region, and was occupied by the Germans in 1885. It is inhabited by the Namas, a few bushmen, some tribes of Hottentots, and white settlers. See South-West Africa.

**Namaqualand,** LITTLE. Dist. in the Cape Province. It lies S. of the Orange River, by which it is separated from Great Namaqualand. Diamonds and copper are exported from Port Nolloth. Area 20,000 sq. m. Pop. 25,847.

**Namasagali.** Port on the Victoria Nile. It is connected by the Busoga rly. with Jinja. A steamer service runs to Foweira, 160 m. N.N.W.

**Nam-dinh.** Town of Vietnam, in N. Vietnam, on the rly. from Hanoi to Hué and Tourane. It is 45 m. S.E. of Hanoi, on the Songka. There is a trade in silk and cottons.

**Name.** Title by which any person or object is indicated; in a narrower sense, the name given to a person or object to distinguish it from others of the same class. The manner in which personal names were given varied among different peoples, but names taken from personal characteristics and peculiarities are common to all.

In the U.K. a person may change his surname as he pleases. His name is that by which he is generally known. Although during the Second Great War an advertisement in the London Gazette had to be published, no formalities are now necessary for a change of name, but to preserve evidence of change it is sometimes desirable to execute a deed poll, or in rare cases to obtain a royal licence or the passing of a private Act. To have the name changed on ration books and identity cards, notice must be given to the authority issuing the document.

A Christian name, i.e. one given at baptism, cannot be changed except by the bishop at the time of confirmation; by Act of parliament; or on the legal adoption of the bearer of the name, when another name may be added. A person who has not been christened may change his first name or names in the same way as his surname. A woman on marriage in England usually takes the surname of her husband, but need not. In Scotland she still uses her maiden name in legal documents. On divorce she may revert to her maiden name.

The Greeks had no names answering to surnames, and it was left to the parent to decide what name the child should have. Most Greek names were compound—*Leuk-ippos* (with white horses), *Thrasyl-bulus* (bold in counsel). In oldest times, the child as a rule took the name of his grandfather, sometimes that of his father. For the sake of distinction a patronymic was often added—Agamemnon Atrides, Agamemnon the son of Atreus; or the father's name was added in the genitive—Cimon of Pericles.

The Romans originally had only one name—e.g. Romulus—but in republican times three names became the rule: *praenomen*, answering to the modern given name—Aulus, Marcus, usually abbreviated to A., M.; *nomen*, the gentile or clan name, nearly always ending in *-ius*, e.g. Julius, Tullius; *cognomen*, the family name, Caesar, Cicero. A fourth name, *agnomen*, was given for famous deeds, such as Afri-

canus, and in cases of adoption, when the adopted son took the three names of his adoptive father, to which he added that of his own clan or gens (*gens*), with an altered termination. Women as a rule had the clan or gens name of their father with a feminine termination, e.g. Tullia.

In England many names are derived from personal characteristics, and are really mere epithets. Patronymics are formed by adding son, e.g. Johnson, Thompson, a favourite method in Scandinavian countries. English surnames may be classified as general and special local names—Hill, Dale, Burton, Buxton; names of occupation—Barber, Brewer, Baker, including lost trades, Fletcher, Pargiter, Reeve; names formed from first names, as Wilkinson, Wills, Willis, from William; names of mental or physical characteristics—Good, Wise, Long, Black, White. A great many of the first names in common use are of religious origin.

Among the Spaniards, names derived from the father end in *-ez*, e.g. Hernandez, the son of Hernando. The old Persians and Indians had compound names, like those in earliest use among the Greeks and Germans. Among the Indians and Hebrews religious names were common—Kalidasa, servant of the goddess Kali, Eliezer, whom God helps. The Arabs form a *praenomen* by the aid of the prefix *abu*, father; names like Hassan, which did not descend from father to son, were usually followed by the name of the father, with an interpolated *-ibn-* or *-ben-*, son of—Hassan-ibn-el-Abbas; other names were taken from religion and court—Salah ed-din, safety of faith, Saladin; from a man's occupation, tribe, birthplace, or sect, while others were pure nicknames. Among the Chinese the *praenomen* is not definitely established, and may be changed until a person enters an educational institution or becomes the holder of a public office.

In some ecclesiastical classes, such as monks and nuns, a new first name is adopted when certain final vows are taken. The pope, on election, takes a new name. Monarchs, on assuming the throne, occasionally use a name by which they had not previously been known, e.g. King George VI had been known during his father's reign as Albert, Duke of York.

Geographical names are often intended to convey to the mind a kind of picture representing the most salient physical features.

Such are Benmore, Morven, both meaning great mountain; Mont Blanc, white mountain. In Celtic Aber, Inver denote places at the mouth of a river—Aberconway, Aberdeen, Aberfeldie and Invergeldie, Inverness. Ard, Craig, Drum, Fell, Pen, Tor, and others refer to high ground generally—Ardglass, green height; Craigmor, great rock; Drumlane, broad ridge; Seawfell, the mountain of the promontory; Penmaenmawr, the great stone head; Torbay, the hill over the bay. There are frequent references to colour, plant and animal life. See Place Name.

*Bibliography.* Dictionary of English and Welsh surnames, C. W. Bardsley, 1901; Words and Places, I. Taylor, 1909; Words and Names, E. Weekley, 1932; Jack and Jill, E. Weekley, 1939.

**NAMING CUSTOMS.** Rites and usages attend the choice and bestowal of personal names. In primitive culture an underlying notion is traceable that names are the substance of individual souls expressed by the voice. So the Eskimo, by naming children after the person last deceased in the village, seek to perpetuate the tribal soul, while the Aztec, by bestowing the name of a dead relative, did the same for the family-soul.

As death or injury may result from the malevolent misuse of names, they are frequently kept secret, sometimes by entrusting them to material objects buried out of sight, other designations being employed in ordinary life. This idea is extended to divine names. Moreover, such crises as initiation, marriage, social promotion, and death necessitate name-changing, by replacement or accumulation, the Kwakiutl even having summer and winter names. Name-changing is also practised for deceiving disease-demons or counteracting sorcery, while opprobrious names, such as Three-farthings, Dustheap, Perdita (lost), are frequently bestowed in infancy to avert evil eye.

A widely observed custom called teknonymy (Gr. *teknon*, child, *onoma*, name), requires fathers to drop their previous names at the birth of sons, and to assume instead the sons' names, or names meaning father of N. Many peoples, e.g. Fuegians and Malays, taboo the names of the deceased, and in Tahiti and Zululand extend this to all related words in the language, for a time at least.

**Name, FEAST OF THE.** Roman Catholic feast in honour of the Blessed Virgin Mary. It arose in

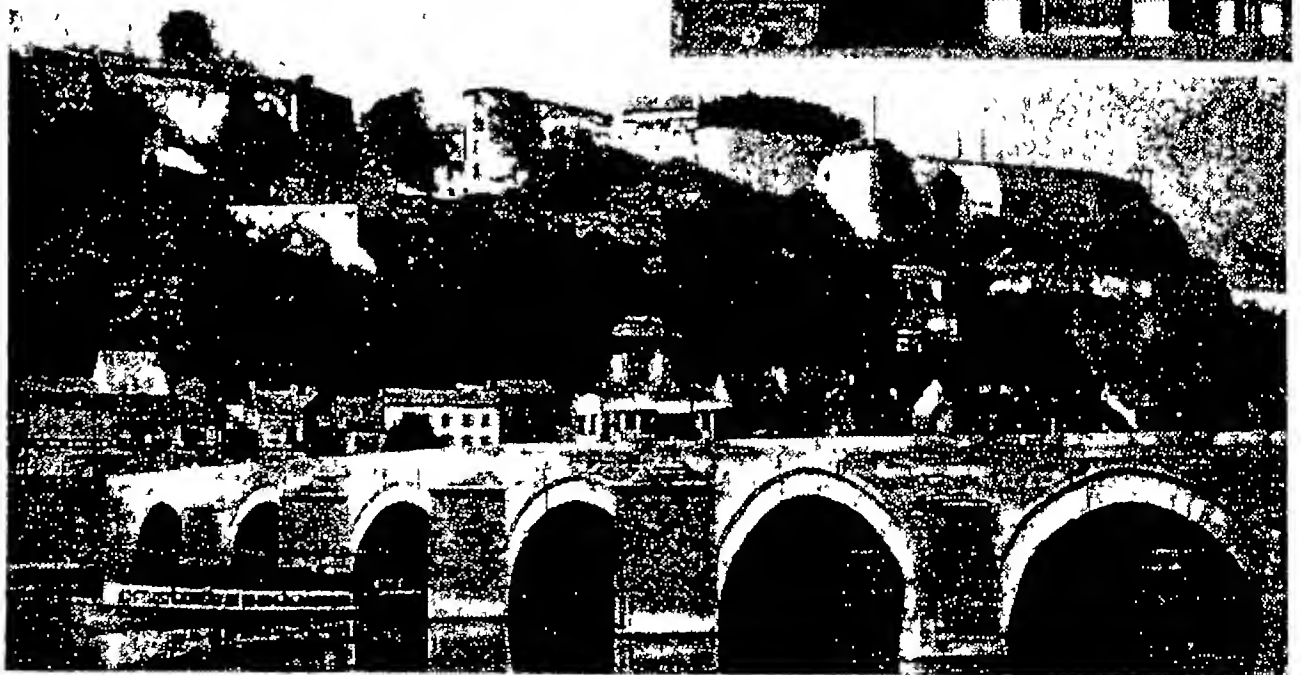
Cuenca, Spain, in the 16th century, and is one of 20 of a similar character. First kept on Sept. 22, then on Sept. 8, it is now observed on Sept. 12.

**Name Day.** A term in the London and other Stock Exchanges. It was applied to the second day of the fortnightly settlement, when the names of the purchasers of stocks and shares are handed in by the brokers concerned, preparatory to the pay day following. In the First Great War, when the fortnightly settlements were abandoned, there were no name days, transactions being settled daily.

**Namoi** OR PEEL RIVER. River of New South Wales, Australia. It rises in the Liverpool Range and flows for about 600 m. N.N.W. to join the Barwon or Darling river. Its upper valley, almost encircled by mountain ranges, is a valuable wheat-growing area. The lower valley is a pastoral area.

**Namsos.** Town and seaport of Norway. Situated at the mouth of the Namsen river, it is 85 m. N.E. of Trondhjem, with which it is connected by rly. Industries are fishing and boat building. Pop. approx. 4,000.

Namsos was used as an Allied base during the brief Norwegian campaign, 1940. On April 14, a British naval detachment landed at the port, followed by British and French troops a few days later. The British and French forces N. of Trondhjem were evacuated from Namsos on May 2. The town was devastated by repeated German bombing raids. See Norway.



Namur, Belgium. The Pont de Jambes over the Meuse, showing the citadel. Upper picture, west front of the cathedral of S. Aubain

**Namur.** Prov. of Belgium. It is contiguous with the provs. of Brabant, Hainault, Liège, and Luxembourg, and with France. The surface is generally hilly, and the prov. is intersected by the deep and picturesque valley of the Meuse. The fertile soil of the N. is

well cultivated, the S.E. part is covered with valuable forests, representing a continuation N. of the French Ardennes. The Sambre valley is the chief industrial area, and there are rly. services to all important towns. Namur is the capital, the three arrondissements being Namur, Dinant, and Philippeville. Area, 1,414 sq. m. Pop. 352,173.

**Namur** (Flemish, Naemen). Town of Belgium, capital of the prov. of Namur. It lies 35 m. by rly. S.E. of Brussels, at the confluence of the Sambre and Meuse. The disused citadel stands between the two rivers, and Salzinnes, Belgrade, S. Nicolas, and Jambes are suburbs connected by tramway with the town.

Namur is a rly. junction, has barracks and other military buildings, law courts, and a prison. The industries include the manufacture of cutlery, leather, iron-work, and distilling, as well as firearms and tobacco. The 18th century cathedral of S. Aubain, in Renaissance style, on the site of an earlier building, contains the



heart of Don John of Austria. The 17th century church of S. Loup is a good example of the Baroque style. The late 14th century belfry was rebuilt in the 16th. There are museums of archaeology, and above the citadel is a finely laid-out park. Pop. 32,000.



**Namur, SIEGES OF.** In the war of the Grand Alliance, the French under Vauban invested Namur, May 26, 1692, and captured the town on June 5, and the citadel itself on June 23. Namur was defended by the Dutch engineer, Menno van Coehoorn (1641-1704), who constructed its fortifications. In 1695, however, William III of England, with Coehoorn, besieged the town, now defended by Boufflers, and after 67 days' investment captured the citadel on Aug. 30, 1695. The later fortifications were constructed in 1888 by Brialmont as part of the Meuse Valley system.

At the outbreak of the First Great War, Namur was ringed by nine armoured forts with 350 guns and a garrison of 30,000. It was the focal point of six railways and, after the fall of Liège, became the hinge on which the French armies were to manoeuvre in their attempt to outflank the Germans in Belgium. On Aug. 19, 1914, the German army invested the fortress and two days later opened a heavy bombardment of the three eastern forts. Next day a sortie by the garrison, supported by part of the French 5th army, failed in an attack on the German artillery positions, and the French were obliged to retreat. By Aug. 23, only three of the forts remained in action, and the Belgian field army was obliged to retire in the face of the rapid advance of the German infantry, who entered Namur that evening. On Aug. 25, the last forts were silenced and the German occupation of Namur completed at a cost of 12,000 casualties. The Allied losses were approximately the same.

During the Second Great War, when the Germans invaded Belgium on May 10, 1940, Namur formed the S. bastion of the Namur-Liège line along which the Belgian high command planned to fight the delaying action essential until the British and French could take up positions along a line from Antwerp through Namur to Givet on the French frontier. The Belgians were then to withdraw to the main defence line stretching from Namur to Antwerp. By May 11, however, the enemy had advanced so rapidly that the Belgians were immediately forced back, without any delaying action, on the Antwerp-Namur line. Namur itself was defended by the Belgian 7th army corps. Following the

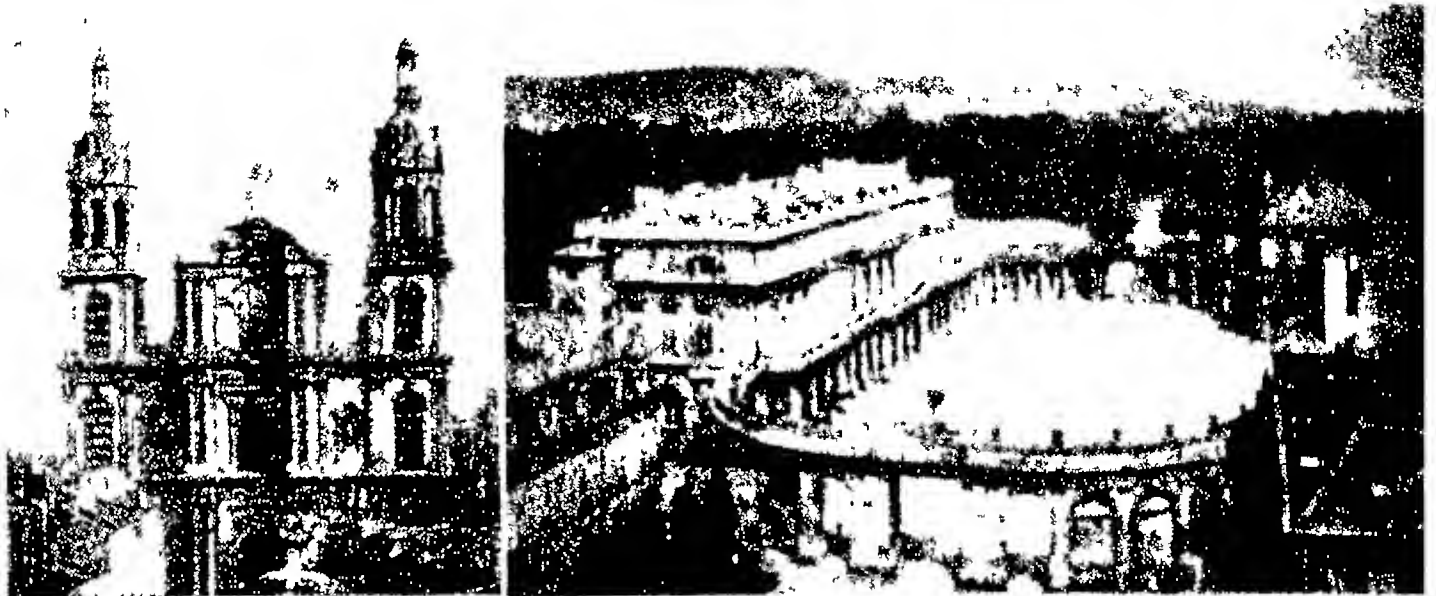
German breakthrough at Sedan, the Allied positions in central Belgium became untenable, and the Belgian army corps was withdrawn from Namur, although some of the individual forts continued resistance until the Belgian surrender. Namur was liberated by U.S. forces on Sept. 5, 1944.

**Nanai.** Tungus-Manchurian tribe of Khabarovsk territory, R.S.F.S.R. Their chief occupation is fishing in the Amur river.

**Nanaimo.** A town of B.C., Canada, on Vancouver Island. Situ-

ated 65 m. N.E. of Victoria, it has a station on a branch rly. and a good harbour, whence steamers go to Vancouver, Victoria, and elsewhere. There are saw mills and brickyards, and fishing and fish curing are carried on. Coal is found in the neighbourhood and exported. The town was a post of the Hudson's Bay Co. Pop. (1956) 12,705.

**Nanchang.** Capital of Kiangsi prov., China. It is situated on the Kan river, and was formerly on the Po-yang Lake, which has since



Nancy, France. Left, west front of the cathedral; right, Government Palace and its courtyard, formerly the residence of the governors of the province

receded some 30 m. Nanchang is connected by rly. with Kiukiang on the Yang-tse. Pop. 412,000.

**Nancy.** French town, capital of the dept. of Meurthe-et-Moselle. It stands on the Meurthe and the Rhine-Marne canal, 220 m. E. of Paris. It was the capital of the former duchy of Lorraine before the war of 1870. The Place Stanislas, the principal square, was laid out by Stanislaus Leszcinski, who became duke of Lorraine on his abdication from the Polish throne in 1738. Interesting buildings include the Cordelier church (15th century), the ducal palace (16th century, though partly rebuilt later), the town hall (17th century), and the Pépinière (1765). The town was founded in the 11th century and here Charles the Bold was defeated by the Swiss in 1477. Charles III laid the first stone of the handsome new town in 1608.



Nana Sahib. Notorious leader of the Indian Mutiny. He ordered the massacre of Cawnpore

Nancy is the seat of a bishopric and a university. It possesses theatres, libraries, and museums, and the school of forestry which is unique in France. Its industries include textiles, chemicals, ceramics, and iron and wood products, and the manufacture of tobacco. It is a military centre and has three airports, two under military control. Pop. (1954) 124,797.

On Aug. 24, 1914, a German army advancing from Metz attacked the retreating French, who were holding the Grand Couronné

a semi-circular ridge to the N. of Nancy. The next day the enemy reached Rozelieus, but a French counter-attack took the Germans by surprise and in the three days much ground was regained. Both sides were too exhausted to continue the struggle immediately, and there was a lull in the fighting until Sept. 4, when the Germans launched a new offensive and compelled the French to yield some ground. By pushing up the valley of the Moselle, the enemy took the French in the rear and threatened to penetrate between Nancy and Toule. Although the German advance was eventually held, the French were too exhausted to counter-attack. On Sept. 10, fresh French troops were brought up and a determined attempt made to regain the lost ground; this proved so successful that on Sept. 12 the Germans began a general retreat and the French entered Luneville. About 200,000 French troops were engaged against 250,000 Germans led by Prince Ruprecht. The action was notable as one of the first occasions of the First Great War on which the German army suffered a serious reverse, and it did much to hearten the French in their campaign to halt the German advance into France.

During the Second Great War Nancy was captured by the Germans, June 19, 1940, and after the Franco-German armistice lay within the German-occupied zone of France. It was German supreme command H.Q. in France until shortly before the U.S. 3rd army entered it Sept. 15, 1944, to find it already in the hands of the F.F.I. The Germans blew up the bridges across the Meurthe and the electricity and gasworks; otherwise the town was virtually undamaged.

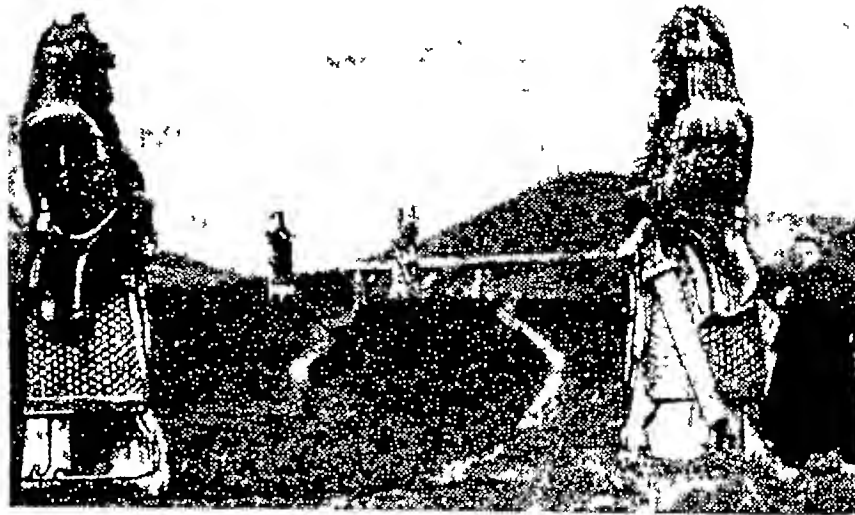
In Dec., 1947, disastrous floods destroyed 2,000 homes in the town.

**Nanda Devi.** Peak of the Himalaya Mts., India. It rises to 25,645 ft. above the plains of Kumaun in the N. of the Uttar union. The 1933 Everest expedition attempted an ascent.

**Nanded.** Town and dist. of Bombay, India, in Aurangabad division. The town is on the left bank of the Godavari, 126 m. S.W. of Amraoti, with which it is connected by road. Pop. (1951) dist., 949,550; town, 65,024.

**Nandgaon.** A former state of India, now part of the Madhya union. It lies on the watershed between the Wainganga and Mahanadi valleys. Rice, wheat, and cotton are grown. The capital is

Rajnandgaon, on the rly. between Nagpur and Raipur; it has cotton, oil and rice mills. Area 872 sq. m. Pop. 202,973.



Nanking, China. Avenue of giant statues, leading to the royal tombs of the Ming dynasty

**Nandi.** Nilo-Hamitic Negro people in Nyanza prov., Kenya, about 112,000 in number. Migrant from the Mt. Elgon area, they colonised the Nandi plateau and surrounding uplands. They have imparted their language and culture to the Dorobo hunters of Masailand. Their main interest lies in their cattle, but they have become more and more dependent on arable agriculture, millet being the chief crop. There are 17 dispersed exogamous totemic clans; inter-marriage between some is prohibited. Age sets are demarcated by the flowering of the *setiot* bush. Local areas have their own councils (Kokuet), represented on regional councils (Pororiet).

**Nanga Parbat.** Peak of the Himalaya Mts., Kashmir. It rises to 26,629 ft. in the Zaskar Range in the S.W. of Baltistan.

**Nankeen.** Yellowish cotton fabric said to have been first made at Nanking, China. Originally it was made from *Gossypium religiosum*, a brownish-yellow native cotton, and was undyed. Nankeen is now made in Europe and other countries from ordinary cotton, dyed yellow, and is exported to China.

**Nanking.** Capital of Kiangsu prov., China. It is situated on the Yang-tse, though the walled city lies away from the river, nearly 200 m. from the mouth. Its port is accessible to ocean-going steamers all the year round. The circuit of the walls is over 20 m. Near by are the Ming tombs, including that of the founder of the dynasty, Hung Wo.

The town is said to have given its name to Nankeen cloth. Among its other manufactures are satin crêpe and Indian ink. Government establishments include an arsenal, a powder works, and a mint. There are a university, a naval college,

and an agricultural experimental station, with a school of forestry. The town is connected by rly. with Shanghai, and Pukow, the port on the opposite bank of the Yang-tse, is the terminus of the Tientsin Pukow rly.

Dating from the 5th or 6th century B.C., Nanking (meaning S. capital) was the capital of China for several periods between A.D. 222 and 501, and again from the accession of the Ming dynasty in 1368, until their removal to Pekin (Peiping) in 1403. The

city was nearly destroyed by the Taipings, who took it in 1853, and overthrew the famous Porcelain Tower. It was their capital until 1865, and gradually recovered. At Nanking the first treaty between the U.K. and China was signed, 1842. In 1928 the victorious Nationalists moved the capital from Peking to Nanking, but after having been repeatedly bombed by Japanese aircraft during 1937, it was captured on Dec. 13, 1937, British and American gunboats being sunk during the final attack. During the Japanese occupation it was for a time the capital of the Japanese-sponsored Chinese government under Wang Chung-Wei. On Aug. 25, 1945, Chinese nationalist troops entered Nanking, where the formal surrender of the Japanese forces in China took place on Sept 5. Nanking was again the capital of China during 1946-49. Pop. (1950 est.) 1,020,000.

**Nanning.** City of China, in Kwangsi prov. Standing on the Si Kiang or West River, 320 m. W. by S. of Canton, it was opened as a treaty port in 1907. Pop. 52,000.

**Nansen, FRIDTJOF** (1861-1930). Norwegian explorer and administrator. Born near Christiana (Oslo), Oct. 10, 1861, he graduated from Christiana university and was appointed curator of the natural history museum at Bergen. In 1888-89 he



Fridtjof Nansen, Norwegian explorer

crossed the Greenland icefield from E. to W., studying the people and natural history, as recorded in *The First Crossing of Greenland* (1890) and *Eskimo Life* (1893).



In 1893 he embarked in the *Fram* on an Arctic polar expedition. Skirting the N. coasts of Europe and Asia, he allowed his vessel to drift with an icefloe, and then, with one companion, he pushed across the ice on foot until he reached 86° 14' N., the farthest point then attained. He wintered in Franz Joseph Land, and was ultimately picked up in 1896 by the Jackson-Harmsworth expedition. Upon his return to Norway his book *Farthest North* (1897) became a best-seller. He lectured in London and other places on his Arctic experiences and observations. From 1905 he took an active part in Norwegian politics, and had much to do with the separation of Norway from Sweden. He was appointed the first Norwegian ambassador to Great Britain, resigning in 1908 to carry out oceanographic research in the Arctic. In 1917 he went to the U.S.A. as head of a govt. mission to negotiate food supplies, and in 1919 became chief Norwegian delegate to the League of Nations. In 1920 he was appointed director of an international organization for repatriating ex-prisoners of war from Siberia. This organization developed into the Nansen office (*v.i.*). During 1921-23 he was also director of famine relief in Russia, and was responsible for feeding 12,000,000 persons. He was awarded the Nobel peace prize in 1923 and devoted the money to the furtherance of demonstration farms he established at Saratov. In 1921 he had been appointed prof. of oceanography at Christiania (Oslo) university, and in 1926 he refused the premiership of Norway. In 1928 he published *Armenia and the Near East*. He died suddenly at Oslo, May 13, 1930, preparing an airship expedition to the N. Pole. *Consult* Lives, E. S. Starritt, 1930; J. Sorensen, 1932; E. E. Reynolds, 1932; C. Turley, 1933.

**Nansen Office.** Former international organization for the assistance of refugees. It evolved from the refugee work of the League of Nations, begun in 1920 under the direction of Nansen (*v.s.*), and upon his death in 1930 was constituted as an autonomous organization by the league. It was primarily concerned with 3,000,000 White Russians, many of whom were settled in Poland and China; 300,000 Armenians, settled largely in Near Eastern countries; 1,500,000 Greeks, expelled from nationalist Turkey and eventually established in Greece in exchange for Turks living in that country;

and some thousands of Assyrians. Large numbers of refugees from the Saar (*q.v.*) were established in France and the Argentine.

The Nansen office was responsible for collecting information regarding the moral and material condition of the refugees and for assisting them to find employment and opportunities for settlement. Schools, hospitals, and churches were built, a children's home maintained near Paris, and a home for the aged at Nice. Until they were able to acquire a definite nationality, refugees were provided with temporary identity papers called Nansen passports (*v.i.*). The work of the office was financed by a grant from the league, subsidies from governments, gifts from institutions and individuals, and the sale of surcharged postage stamps in France and Norway. In 1937 the humanitarian activities of the Nansen office were recognized by the award of the Nobel peace prize. In 1938, when the number of refugees under its control had fallen below 5,000, the office was closed and its work transferred to a high commissioner appointed by the League of Nations. *See* Refugees.

**Nansen Passport.** Identity document devised by Fridtjof Nansen (*q.v.*) and granted through the Nansen Office (*v.s.*) to stateless refugees. The "passport" established a provisional legal status for the holder until such time as he could acquire a definite nationality in the country in which he had settled. A Nansen passport was recognized by most governments and gave the holder a limited freedom of movement, enabled him to obtain small loans of money, and entitled him to reductions on rail and steamer fares. The passports ceased to be valid when the Nansen Office closed in 1938.

**Nanshan.** Mt. range of Asia. It comprises parallel ridges between the Gobi desert and the Tsaidam Swamp on the N.E. boundary of Tibet. The range, alt. 14,000-16,000 ft., which has a general direction N.W. and S.E., is a continuation of the Kwenlun and Altyn Tagh systems. Among the names given to sections of the Nanshan Range are the Alexander III, the Humboldt, the Ritter, and the Amne-Machin Mts.

There is a second range of the same name S. of the Yangtse, running parallel with the coast from Kwangsi to Chekiang prov. Its greatest alt. is 9,500 ft.

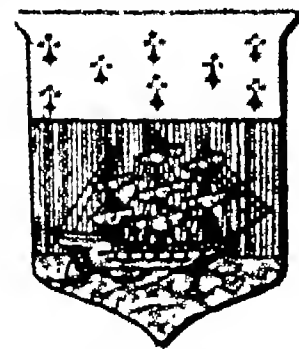
**Nanshan, BATTLE OF.** Fight between the Russians and the Japanese, May 26, 1904. Japan,

having Korea in her hands, determined to capture Port Arthur, and this battle virtually marks the beginning of the siege. The second army under Oku had been embarked during April and began to land near Pitzewu on May 5, but it took nearly three weeks for the whole disembarkation and for the extension across the peninsula.

Having captured Kinchow, Oku provided a guard to the N. against a relieving force, and, turning to the S., found himself faced by the naturally strong position of Nanshan, a line of hills, 300 ft. high in the centre, across the narrowest part of the peninsula, both flanks resting on the sea, the left (W.) ending in precipitous cliffs, and the right supported by the fire of Russian gunboats. The position was held by about 12,000 Russians, carefully entrenched, and with their front covered by formidable obstacles, but was engaged by the Japanese. Their first rush at dawn on May 26 only carried them up to the beginning of the obstacles, but through this day of stress they made nine successive attempts to carry the position, losing heavily, in the effort to find a weak flank. Towards evening an attack pushed strenuously all along the line carried out the scheme. A division on their right, powerfully aided by artillery fire from land and sea, waded along the coast, and swarming up the cliffs, turned the Russian left.

Stössel, in command at Port Arthur, although only 3,000 of his men had actually been engaged, and he had lost about 1,500 men, ordered a retirement to the prepared positions in rear. It was a decided Japanese victory, for they had captured many guns, and were now in a position to begin the investment of Port Arthur. *See* Port Arthur; Russo-Japanese War.

**Nanterre.** Town of Seine dept., France, 5½ m. N.W. of Paris. It was the birthplace of S. Geneviève, whose prayers are said to have preserved Paris from Attila. The church contains an alleged frag-



Nantes arms

ment of the true cross, an object of veneration by pilgrims for centuries. Pop. (1954) 53,037.

**Nantes.** City of France. Capital of the dept. of Loire-Atlantique, it is built on several islands of the Loire, 248 m. S.W. of Paris; in 1954 it was the 7th largest town in France, and, although 35 m. from

the sea, it is a great port, with an annual turnover between 1.5 and 2 million tons, a ship building centre, and a naval arsenal. The quays extend for 2 m. and before the Second Great War it had 21 bridges across the river. The seat of a bishopric from the 4th century, it has the cathedral of S. Pierre, built in the 6th century, but

Nantes, meeting little opposition from the Germans, who had, however, carried out demolitions, including that of the old Pont de la Vendée.

**Nantes, EDICT OF.** Law or edict issued in 1598 by Henry IV of France, giving liberty of worship to the Huguenots. The accession of the Protestant Henry of Navarre to the throne of France in 1589 and his conversion to Roman Catholicism brought no immediate relief to the Huguenots, who still suffered serious disabilities, despite the various pacifications attempted in the course of nearly 40 years of religious warfare. At length meetings were arranged between the king and the Protestant leaders, and the edict signed at Nantes by Henry, April 15, 1598, contained a large number of articles, the effect of which was to give civil and some religious liberty to the Huguenots.

They could hold meetings for worship in certain specified places, although not in Paris. They could fill official positions and enter universities, colleges, etc., while their pastors were paid by the state. They could trade freely and inherit property. As security they were given 100 places as cities of refuge, and disputes about the edict were heard before special courts in which they were represented among the judges. These courts were connected with the various parlements. The edict was revoked by Louis XIV in Oct. 1685, after the Huguenots had been steadily losing their rights under it for some years. *See France: History.*

**Nanteuil,** ROBERT (c. 1623-78). French engraver. He was born at Reims and about 1646 entered the studio

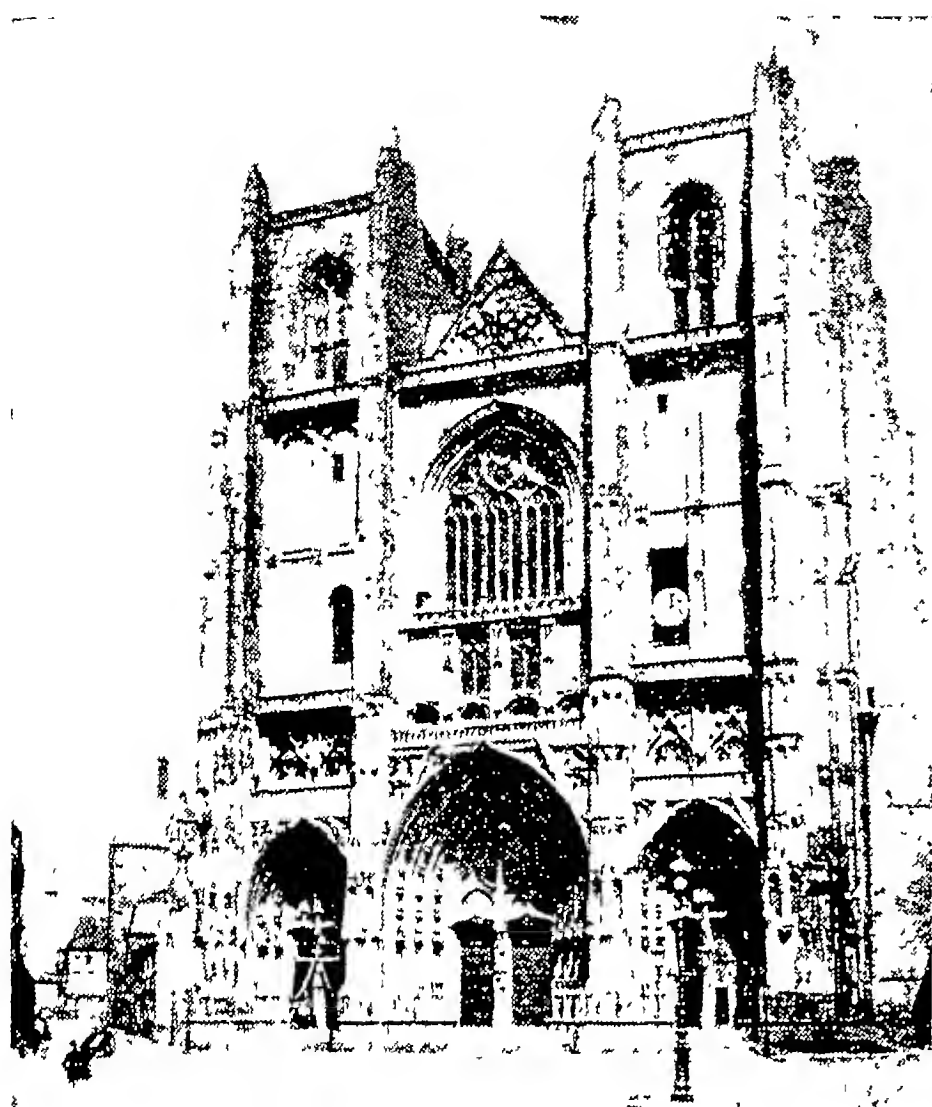
of Nicholas Regnesson at Paris. In 1658 he was appointed engraver and designer to the king. By this time he had evolved a clear and beautiful method of engraving, and his crayon portraits were also held in high esteem.

**Nantgarw.** Village of Glamorganshire, Wales. In the valley of the Taff, it is 5 m. from Cardiff. It gives its name to a variety of china. In 1811 Billingsley, the flower painter, opened a factory here. He had been associated with Duesbury at the famous works where Crown Derby was produced. Thence he went, in 1796, to Pinxton, and in 1803 to Torksey, opening a pottery in both places, and finally to Nantgarw. His Nantgarw pottery is unique, the fine body of even texture being more like glass than china. A large coking-plant was opened here in 1951.

**Nanticoke.** City of Pennsylvania, U.S.A., in Luzerne co. It stands on the Susquehanna R., 18 m. S.W. of Wilkes-Barre, and is served by rly. Anthracite is extensively worked in the area—among the world's richest coal-mining districts. It owed its foundation to the water-power provided by the falls here, and industrial establishments include hosiery, knitting, silk, timber, flour, and grist mills, as well as factories manufacturing mining and agricultural equipment. About 10,000 miners work in the neighbourhood. Nanticoke was incorporated as a borough in 1874, and as a city in 1926. Pop. (1950) 20,160.

**Nantucket.** Town of Massachusetts; U.S.A., co. seat of Nantucket co. It is on the N. coast of Nantucket island which gives its name to the sound between the island and the mainland; with adjacent islands of Tuckernuck and Muskeget it forms the co. A whaling centre in the 18th and early 19th centuries, in 1835 it was the state's third richest commercial centre, with a chiefly Quaker pop. A favourite resort, first settled 1659, it retains its oldest house built in 1686, the Old Mill, the South or Unitarian Church, the Historical Museum, and the Whaling Museum. Pop. (1950) 2,901.

The island, 15 m. long and 3 m. wide, has 88 m. of coastline; it lies 30 m. S.E. of Cape Cod and Buzzard's Bay. Owing to the influence of the Gulf Stream it has warmer summers and milder winters than the adjacent mainland. The important Nantucket lightship is moored 41 m. off the S.E. coast of the island.



Nantes, France. West front of the cathedral of S. Pierre, with its elaborately ornamented portals

extensively rebuilt at later dates. Other interesting buildings are the church of S. James (12th century), the prefecture (1763), the stock exchange (1792), and a number of ancient houses. The castle of the dukes of Brittany dates in part from the 14th century. The main industries, apart from those associated with the port, are engineering, paper-making, chemical manufactures, and food preserving.

Nantes was the capital of the Gallic tribe of the Namnetes, and was for long ruled by Breton dukes. It came under French rule in 1491, and there, in 1598, Henry IV signed the famous edict (*v.i.*) granting religious freedom to the Huguenots. Pop. (1954) 222,790.

Nantes was one of the ports used by the B.E.F. in Sept., 1939, and it served also as a maintenance depot. On June 20, 1940, the port was taken by German troops and included in the occupied zone after the Franco-German armistice. Allied aircraft made several attacks on the dock area during the German occupation. On August 9, 1944, U.S. armoured columns entered

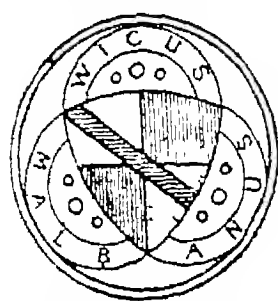


Robert Nanteuil, French engraver

*Self-portrait*



**Nantwich.** Urban dist. and market town of Cheshire, England. It stands on the Weaver, 161 m.



Nantwich arms

N.W. of London. and 4 m. S.W. of Crewe, and is served by rly. The chief building is the old cruciform church of S. Mary and S. Nicholas. There are a 17th century grammar school and some old houses. The industries include the manufacture of leather goods and high-class clothing. Nantwich is a hunting centre and has a spa. It had fairs and markets in the Middle Ages, and salt, of which industry it was a centre, was worked early. The works were especially prosperous in the 16th-18th centuries, after which they declined and disappeared. Shoes and gloves were also made at that time. Market days, Thurs. and Sat. Pop. (1951) 8,840. Consult History of Nantwich, J. Hall, 1883.

**Nantyglo and Blaina.** Urban dist. of Mon-

mouthshire, England. It is 7 m. W.S.W. of Abergavenny, in a coal-mining area. It also has factories processing rubber and plastics and making felt, clothing, and boots, and a brass foundry. Pop. (1951) 11,442.

**Naomi.** Character in the O.T. book of Ruth (*q.v.*). Wife of Elimelech, of Bethlehem-judah, after losing her husband and two sons in the land of Moab, whither the family had fled through famine, she returned in sorrow to her native land. Ruth was her daughter-in-law.

**Naoroji, DADABHAI** (1825-1917). Indian politician. Born at Bombay, Sept. 4, 1825, the son of a Parsee priest, he was educated at Elphinstone school and college. He returned to it in 1854-55 as professor of mathematics and natural philosophy. Then he went to England to engage in business. Elected in 1892 as Liberal M.P. for Central Finsbury, he was the first Indian member to sit in the British house of commons, but lost his seat in 1895. In 1886 and 1893 he was president of the Indian national congress. He published Poverty and Un-British Rule in India, 1901. He died July 1, 1917.

**Nap** OR NAPOLEON. Card game, usually for three to five players. It is played with a full pack, the cards bearing the same value as in whist. The dealer gives five cards to each player, the one on his left having first call. There are calls of two tricks, *misère* (in which the caller undertakes to lose every trick), three, four, and five tricks, the last being known as *nap*. The player calling the highest leads, and endeavours to make his tricks; he chooses his own trumps, the first card he plays indicating the suit. If he makes the contract he receives payment according to the number of his call; or, failing, has to pay each player in the same proportion. It is usual for the caller of *nap*, when successful, to be paid double stakes. Also it is



Nantwich, Cheshire. Cruciform parish church of S. Mary and S. Nicholas

sometimes agreed that a player going *nap* may have the option of picking up the top card of the remainder of the pack and substituting it for one of the five he originally received from the dealer.

**Napata.** Ancient Nubian city on the right bank of the Nile below the 4th cataract; also a district that included Mt. Barkal. An early centre of Sudanese trade, it became an outpost of XVIIIth-dynasty Egypt, and immigrant Theban priests founded a line from which the Ethiopian pharaohs of the XXVth dynasty may have sprung. The slender pyramids, Amon temple, and funerary shrine of Taharka are essentially Egyptian.

**Naphtali.** Name of one of the ten northern tribes of Israel, and of its traditional ancestor, the sixth son of Jacob. He was Bilhah's second son (Gen. 30). The tribe of Naphtali, "a hind let loose," was settled in fertile territory W. and N.W. of the Sea of Galilee, and was among the first to be led into captivity (2 Kings 15; Isaiah 9).

**Naphtha.** Word of Persian origin, referring originally to certain petroleum seepages in Persia. It is now applied to volatile

hydrocarbons obtained by the distillation of crude petroleum, shale oil, and coal tar. Petroleum naphthas are produced by simple distillation of crude oil and, after refining, are redistilled to give fractions of very close boiling range, *e.g.* the 90-120° C. cut which is used for dry cleaning. Naphtha from shale oil is the light distillate occurring during the fractionation of the crude shale oil obtained by retorting oil shale (*q.v.*). Coal tar or solvent naphtha consists of the higher boiling fractions of light oil, the first cut in the distillation of crude tar oil. Naphthas are chiefly used as industrial solvents; the shale oil naphtha is also the basis of a motor spirit.

**Naphthalene.** White solid hydrocarbon, with a characteristic smell, one of the products of the dry distillation of coal. The coal tar of gas works is the chief source of naphthalene. It was discovered by Garden in 1819 in coal tar, and its chemical composition was investigated in 1826 by Faraday, who assigned to it the formula  $C_{10}H_8$ . It forms from 5 to 10 p.c. by weight of crude coal tar, and is obtained on the large scale from the "middle-oil" fraction obtained by distilling coal tar, the oil containing about 30 p.c. of naphthalene. The crude product is purified by treatment with caustic soda to remove phenol and again distilling. The crystalline mass obtained in this way is separated from any adhering oil by means of a filter press.

Naphthalene is employed for making sulphonic acids, naphthols, and naphthylamines needed in the dyeing industry, and especially for the manufacture of phthalic acid required for synthetic indigo and eosin dyes. It is used also for enriching or carburetting water-gas to make it luminous, and as alko-carbon for increasing the luminosity of coal gas. Naphthalene is a powerful antiseptic, and is widely used to preserve woollen goods and furs from moths.

**Naphthol, ALPHA AND BETA.** Solid hydrocarbons, closely related to the phenols in their chemical properties. The chemical formula for the naphthols is  $C_{10}H_7OH$ . Alpha-naphthol is made by fusing naphthalene monosulphonic acid with caustic soda. Beta-naphthol is prepared from beta-naphthalene sulphonic acid. Both are powerful antiseptics, and are used as the starting-point in the manufacture of important aniline dyes. Alpha-naphthol will preserve the albumen used in calico printing.

**Naphthylamine** OR AMIDO-NAPHTHALENE. Hydrocarbon with the chemical formula  $C_{10}H_9N$ . There are two naphthylamines, alpha and beta. Alpha-naphthylamine has a repulsive odour, while beta-naphthylamine is odourless. Both are employed in the manufacture of aniline dyes.

**Napier.** City and port of North Island, New Zealand. The capital of Hawke's Bay dist., it is in pastoral country. It is connected by rly. and steamer with Wellington (200 m.) and Auckland (372 m.). Pop. (1951) 19,712.

**Napier, BARON.** Scottish title. The first holder was Sir Archibald Napier 1576-1645, 9th baron



1st Baron Napier,  
Scottish  
agriculturist

Merchiston who gained celebrity in Scotland for his agricultural experiments, and followed James I to England in 1603. In 1623 he became lord of session, and in 1627 was created baron Napier of Merchiston. Both he and his son, Archibald (d. 1658), 2nd baron, were closely associated with Montrose.

His son, Archibald, the 3rd baron, died unmarried in 1683, when his nephew, Thomas Nicolson, succeeded to the title. The next holder was the 3rd lord's sister, Margaret, from whom it descended to her grandson, Francis Scott, who took the name of Napier. The title is still held by his descendant, Baron Napier and Ettrick.

**Napier OF MAGDALA, ROBERT CORNELIS NAPIER, 1ST BARON (1810-90).** British soldier Born at Colombo, Ceylon, Dec. 6, 1810, he entered the Bengal Engineers in 1826 and having specialised in engineering, became chief engineer of the Punjab in 1849. During



Baron Napier of  
Magdala,  
British soldier

the Mutiny his work as chief engineer to Sir Colin Campbell brought him a K.C.B. In the Chinese War, 1860, he held a command, but his most notable military service was his conduct of the campaign in Abyssinia, 1868, which brought him a peerage. From 1870-76 Napier was commander-in-chief in India. He died Jan. 14, 1890. See Hist. of the Abyssinian Expedition, C. R. Markham, 1869.

**Napier, SIR CHARLES (1786-1860).** British admiral. Born March 6, 1786, he entered the navy



Sir Charles Napier,  
British admiral

in 1799, saw active service, and in 1810 was with the army in the Peninsula. Returning to the navy, he performed some daring exploits in the Mediterranean.

In 1833 he was given command of the Portuguese fleet in opposition to Dom Miguel, whose squadron he defeated. He was hailed as the liberator of the country and raised to the Portuguese peerage, but resigned on the rejection of his proposals for naval reform. He commanded the troops ashore on the Syrian coast in 1840 and was made a K.C.B. for the capture of Acre, where he was second-in-command. His command of the Baltic Fleet in 1854 was only partially successful. He died Nov. 6, 1860.

*Bibliography.* War in Portugal, 1836; War in Syria, 1842; The Navy: Its Past and Present State, 1851; Life and Correspondence, Gen. E. Napier, 2 vols., 1862.

**Napier, SIR CHARLES JAMES (1782-1853).** British soldier. Born in Whitehall London, Aug. 10, 1782, a grandson of the 5th Lord Napier of Merchiston, he entered the army, 33rd regiment, in 1794, but, except when dealing with the insurgents in Ireland, saw no active service



Sir Charles Napier,  
British soldier

After F. Williams until 1808. He commanded the 50th Foot in the retreat to Corunna, was seriously wounded, and taken prisoner. Released on parole, he was formally exchanged in 1810, and in the following year returned to the Peninsula. In 1815 he took part in the Waterloo campaign, though not present at the actual battle. He was appointed governor of Cephalonia in 1822, but his life was comparatively uneventful until, in 1841, he sailed for India to take command in Sind. After a campaign Sind was annexed, and Napier was appointed governor of the new province, to the reorganization of which he devoted himself successfully. He rendered further military service in the Sikh war of 1848, and was commander-in-chief in India, 1849-51. He died at Oaklands, near Portsmouth, Aug. 29, 1853. His

life was written by his brother, Sir William, while his own writings include Lights and Shadows of Military Life, 1840.

*Bibliography.* Lives, W. F. P. Napier, 4 vols., 1857; W. N. Bruce, 1885; W. F. Butler, 1890; Records of the Indian Command of Gen. Sir C. J. Napier, J. Mawson, 1851.

**Napier, JOHN (1550-1617).** Scottish mathematician Born at Merchiston Castle, near Edin-



John Napier,  
mathematician

burgh, and afterwards the 8th laird of Merchiston, his first mathematical work, De Arte Logistica, suggested that he had discovered a method of solving equations of the second and higher degrees. About 1594 he began to lay the foundations of his great discovery, logarithms, upon which he worked for the next twenty years. In connexion with them he suggested the present notation for decimals. His tables were published 1614, under the title Mirifici Logarithmorum Canonis Descriptio. He died April 4, 1617. See Briggs, H.; Logarithms.

**Napier, SIR WILLIAM FRANCIS PATRICK (1785-1860).** British soldier and historian. A son of

George Napier, and a grandson of the 5th lord Napier of Merchiston, he was born Dec. 17, 1785. He entered the army in 1800, and in the 43rd regiment served at the

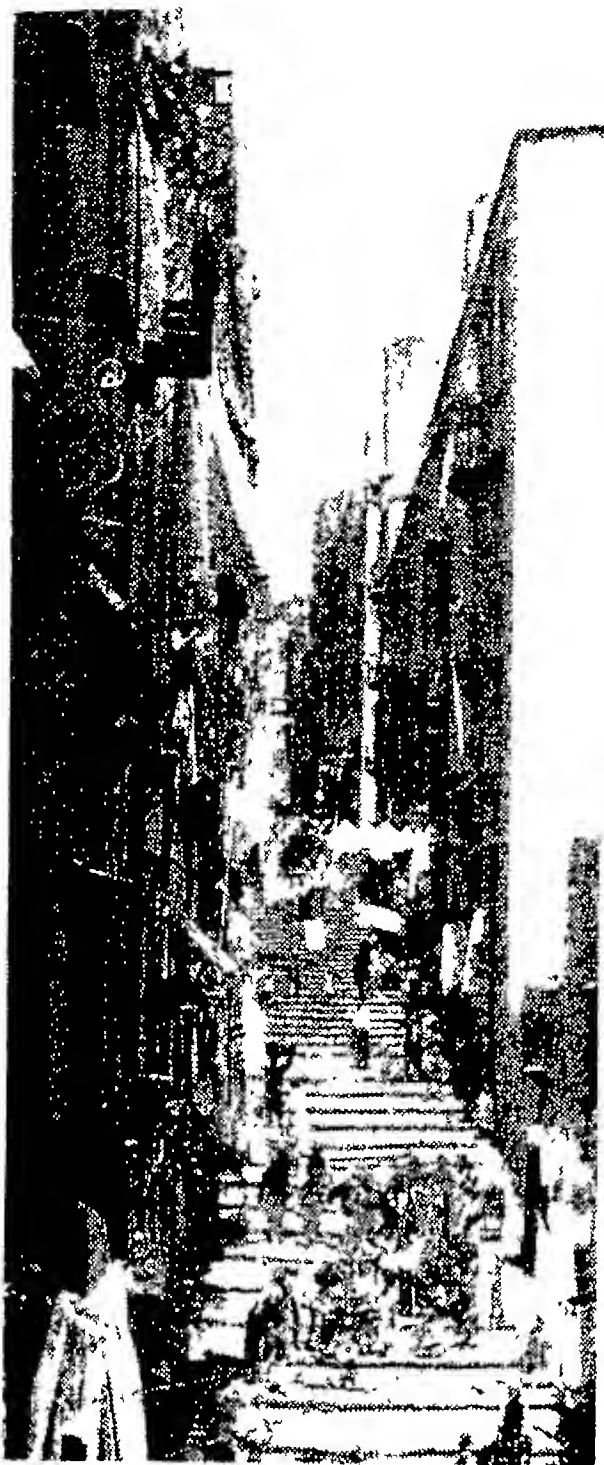


Sir William Napier,  
British historian

siege of Copenhagen, 1807, before proceeding to Spain, where he was present at Corunna. In 1813-14 he was in command of his regiment which formed part of the Light Brigade. Knighted in 1848, he was promoted general in 1859, and died Feb. 10, 1860. Napier is the author of one of the greatest military histories ever written. His History of the Peninsular War was begun in 1823, and the six volumes appeared between 1828 and 1840.

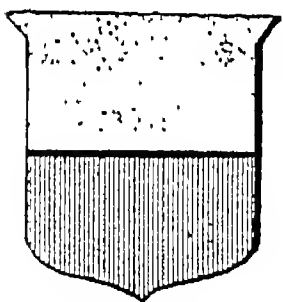
**Naples (Ital. Napoli).** Maritime prov. of W. Italy, in Campania. It curves round the Bay of Naples, and includes the islands of Ischia, Capri, and Procida. A fertile plain in the N., elsewhere it is mountainous, rising in Mt. Vesuvius to about 3,890 ft. In the S.W. is the promontory of Sorrento. Area 351 sq. m. Pop. (1951) 2,080,988.





Naples. A street scene in the Santa Lucia quarter

**Naples** (Ital. *Napoli*). City and port of Italy and capital of the prov. of Naples. Stretching along the N. side of the Bay of Naples, it is perhaps the most beautifully situated city in Europe. Seaward, the bay is protected by islands, Procida, Ischia, and Capri. Inland, a mountain chain hemming in the Neapolitan Campagna, runs down to Sorrento. Rising out of this rich plain the vast cone of Vesuvius towers over the E. suburbs, Portici, Resina, and Torre del Greco, whose villas, vineyards, and orange groves are set upon deposits of lava. To the W. lie the volcanic headland of Posilipo, and Pozzuoli, pierced by sulphurous grottoes and tunnels, the volcano Solfatara, Baia, and the promontory of Miseno. Close to Baia, a volcanic eruption in 1583 flung up Monte Nuovo in a single night, and almost drained the Lucrine lake which, with Lake Avernus, formed the Portus Julius of the Roman fleet. The climate is delightful, the mean temp. varying from 47° F. in Jan. to 76° F. in



Naples arms

July. The rainy season lasts from Oct. to March.

The port, always a busy one, was wrecked by bombing and by German demolitions when, during the Second Great War, the Allies entered the city Oct. 1, 1943, after the Germans had withdrawn; 70 ships had been sunk in the harbour. In less than three weeks Allied engineers had made it usable, and for a time it became the port with the biggest turnover in the world. Naples was the principal mounting port for both the assault convoy and the follow-up convoys in the Allied landings in the S. of France, Aug. 15, 1944. U.S. forces remained in control of the port until it was returned to Italian administration March 1, 1946.

The city is a manufacturing centre, making ships, cars, locomotives, glass, cotton, wool, gloves,

summer lounges, give the town an almost eastern appearance. The Porta Capuana, with its Renaissance gateway, 1484, and two round towers, indicate the vanished walls. Three narrow, straight streets, piercing a quadrangle of crooked alleys, are the Decuman Ways of the Roman town.

The modern quarter, built along the magnificent curve of the Riviera de Chiaia, lies to the W. of a mountain ridge which runs down from Capodimonte and the Castle of S. Elmo to the Pizzofalcone promontory. Along this Riviera lie the Villa Nazionale, a charming public garden bordered by the Via Caracciolo, and the famous Marine aquarium belonging to the zoological station founded 1872. At the foot of Pizzofalcone is the historic egg-shaped Castello dell'Ovo, begun 1154 on an islet,



Naples. Plan of the central part of the city showing docks and harbour

perfumes, linen, and silk. The chief imports are coal, steel, lumber, grain, cotton, wool, leather, oils, wines, and chemicals; the chief exports, wine, brandy, fruits, nuts, paper, hemp, and cereals. Pop. (1951) 1,027,800.

Architecturally Naples has little of interest. The flat roofs of the houses (*astri*) which serve as

From the Corso Vittorio Emanuele, which winds along the hillside, grand views across the town and harbour are obtained, though the finest of all is afforded by Belvedere, in the Carthusian monastery of San Martino, within the walls of S. Elmo.

The remains of the medieval city are among the narrow fetid streets



1. The Piazza Municipio: here are an equestrian statue of Victor Emmanuel II, and at the end, the Town Hall; in the background can be seen the S. Elmo Castle which was built in 1343 and enlarged later. 2. The maritime station.

3. The new post office. 4. Piazza Dante, with the Vittorio Emanuele school on the right, and a statue of Dante, erected 1872, in the centre. 5. Panorama of the city and bay with Mt. Vesuvius in the background

#### NAPLES: VIEWS OF THE CITY AND SOME OF ITS ARCHITECTURAL FEATURES

of the commercial part of the town to the E. of the ridge. The Strada Sta. Lucia is a typical centre of the noisy, dirty, picturesque, and surprising life of the poorer inhabitants. After the cholera epidemic of 1884 among the densely populated and insanitary streets, a huge reconstruction was begun. The streets were widened, electric trams installed, and a new water supply and drainage system introduced.

The Via Roma, the old Via Toledo, running N. and S., is the main fashionable thoroughfare. It leads down from the Bellini theatre, the Piazza Dante, and the museum to the Palazzo Reale and the old round towers of the Castel Nuovo, 1283, renovated 1905. Close at hand is the San Carlo theatre.

The national museum, formerly the seat of the university, contains the Farnese and other collections (Farnese Bull, Dying Gladiator, Hercules, etc.), and innumerable masterpieces of antiquity and relics from the excavations at Herculaneum, Pompeii, and elsewhere. Some of the contents, stored for safety at Monte Cassino, were lost in the action there, 1944.

The cathedral, built 1272-1323, but repeatedly modernised, contains the tombs of Charles of Anjou and Pope Innocent IV, as well as the alleged blood of S. Januarius, now the patron of the cathedral, which liquefies thrice a year, portending good or evil fortune, according as the process is rapid or slow. The basilica of S. Restituta, on the

site of a temple of Apollo, adjoins the W. aisle.

The coffins of the house of Anjou lie in the sacristy of S. Domenico Maggiore, closely connected with S. Thomas Aquinas. A tall brick campanile in the Strada Tribunali is the remnant of a church built by Bishop Pomponius in 514. In San Lorenzo Boccaccio first beheld and loved Fiammetta. Behind S. Genaro there are interesting catacombs of the 1st century. At the university, founded by the emperor Frederick II in 1224, S. Thomas Aquinas lectured. Reorganized in 1781, it had before the Second Great War over 7,000 students. The Germans deliberately burned the contents of the university library. In the Piazza



Mercato, outside the church of Santa Maria del Carmine (which was badly shaken by bombing from the air in the Second Great War) Conradino was executed, and was buried in the church. The church of S. Chiara, burnt out by incendiary bombs, was famous for its sculptures by Tino da Camaino.

Gianbattista Vico, the famous 17th century philosopher, lived in Naples; the poet Giacomo Leopardi died here from cholera; and Benedetto Croce (b. 1866), philosopher and courageous advocate of liberalism under the Fascists, upheld Neapolitan learning.

Naples was founded by Greek colonists and was first called *Parthenopē*, or Virgin City, after a siren said to have been drowned upon the coast. Re-settled by later emigrants from Greece, it was named *Neapolis*, or the New City. Conquered by the Romans, 326 B.C., the beauty of its site and the mineral springs of Baiae, in the western corner of the gulf of Pozzuoli, rendered it and its environs a favourite seaside resort under the Empire. Baths and villas, built along the shore, encroached even upon the sea. Marius, Pompey, and Julius Caesar had houses at Baiae. Horace loved the place; and here Virgil lived, and chose to be buried. The tomb of Virgil is placed in the Grotta di Sejano, which was cut through the rock of the hill of Posilipo in Roman times.

*Bibliography.* Tour through the Southern Provinces of Naples, R. K. Craven, 1821; Italy: Rome and Naples, H. A. Taine. Eng. trans. J. Durand, 1867; Naples in 1888, E. N. Rolfe and H. Ingleby, 1888; Naples, Past and Present, A. H. Norway, 1901; Naples and S. Italy, E. Hutton, 1915.

#### The Kingdom of Naples

Naples was also the capital and name city of a kingdom which existed 1138–1860. The Goths, who had occupied Naples on the fall of the Western Empire, were expelled by Belisarius on behalf of Justinian in 536. It was retaken by the Goths under Totila, 543, but recovered by Narses ten years later. As a Byzantine duchy, Naples opposed the Lombard duchy of Benevento, and became practically independent. Enriched by sea-borne commerce with the East, before Venice, Pisa, Leghorn, and Genoa supplanted her, the maritime city offered a tempting prey to the Saracens from Sicily. It was conquered by Roger of Sicily in 1130, and then became a kingdom.

The Norman kingdom of Naples and Sicily, which included all S. Italy, held as a fief of the Holy See, passed through Constance, the

Norman heiress, to the Hohenstaufen line. The emperor Frederick II was succeeded in the Two Sicilies, as the kingdom was called, by his illegitimate son, Manfred. The pope, however, offered the inheritance of Naples to Charles of Anjou, by whom Manfred was defeated and slain at Benevento, 1266.

The Angevins continued to hold the kingdom of Naples after the Sicilian Vespers had ousted them from Sicily. The dynasty died out with Joanna II, whose evil life still remains a byword. Alfonso V, king of Aragon and Sicily, whom she had once adopted as heir, seized the kingdom upon her death, 1435. After a long struggle with the French, he was acknowledged king of the Two Sicilies in 1443, and bequeathed his Neapolitan kingdom to his cruel and avaricious bastard, Ferrante, or Ferdinand, 1458.

#### French and Spanish Struggles

Joanna I, having no issue, had finally adopted her cousin Louis, duke of Anjou. His rights, passing to Louis XI and Charles VIII of France, formed the pretext for the French invasion of Italy. Charles VIII occupied Naples Feb.–May, 1495. When the French were expelled from Italy, the Aragonese returned to Naples. But Louis XII joined with Ferdinand of Spain against his kinsman Frederick, took and sacked the capital. They fell out over the spoils. Thereupon the Spanish general, Gonzalo de Córdoba, ejected the French, 1504, after the battle of the Garigliano, 1503, and Naples became henceforth a Spanish province.

Before the battle of Lepanto, 1571, restored Spanish supremacy in the Mediterranean, Naples suffered much from raids by the Turks. In 1647 occurred the revolt of Masaniello. Another rising, under Gennaro Annese, was ruthlessly suppressed by Don John of Austria, to whom Gennaro betrayed the city, after the duke of Guise had come, at his invitation, to regain the possessions of the House of Anjou. By the war of the Spanish Succession, Naples, wrested from Spain, passed to the Austrian Emperor, Charles VI, in 1713. But during the war of the Polish Succession, Don Carlos, second son of the Bourbon Philip of Spain, invaded the Two Sicilies, and by the treaty of Vienna, 1738, was recognized as King Charles II. Under the Spanish Bourbons, Naples remained in a state of medieval barbarism. The people were oppressed, poor, ignorant, and lazy; the city teemed with *lazzaroni*, the country with bandits, beggars, and priests. An at-

tempt by Ferdinand IV to expel the French Republican armies from the Papal States was followed by the creation of the Parthenopean Republic in Jan., 1799.

#### Bourbon Restoration

Ferdinand was restored next year by a Calabrian army under Cardinal Ruffo, supported by the British fleet, and even after Maringo, thanks to the intervention of Paul I of Russia, he was still allowed to reign. Napoleon, however, turned out the Bourbons in 1806, and made first his brother Joseph, and then his general, Joachim Murat, king of the Two Sicilies, 1808. Murat, in spite of Napoleon's military and financial exactions, introduced some reforms before he attempted to lead a revolt in favour of Napoleon, and was forced to flee, May, 1815.

Ferdinand IV, returning as Ferdinand I, king of the Two Sicilies, gave fair promises of freedom and reform, while secretly binding himself to Austria not to introduce constitutional changes other than those allowed in the Austrian dominions in Italy. The administration remained corrupt and oppressive as ever. A military rising in 1820, joined by the members of the Carbonari (*q.v.*), and led by General Pepe, wrung the concession of a constitution from the treacherous tyrant; but in 1821 the Bourbons were restored by Austrian bayonets. This oppressive and despotic government was continued by Francis I and Ferdinand II, nicknamed Bomba, who quelled a rebellion in 1828, and in Jan., 1848, yielding to a series of revolutionary outbreaks, granted a constitution. But after a period of wild disorder, the constitution ended in a massacre, May 15, 1848. Ferdinand took ferocious vengeance upon the champions of liberty, which called forth the denunciations of Gladstone, and was checked by British intervention.

At length the emancipation of Italy put an end to Bourbon misgovernment. Garibaldi, landing in Sicily, made his way to the capital, whence Francis II had fled, Sept. 8, 1860. He hailed Victor Emmanuel as king of Italy, and Naples voted itself part of the Sardinian kingdom, Oct. 21. The Two Sicilies were incorporated in the new kingdom of Italy, 1861.

*Bibliography.* History of the Kingdom of Naples, 1734–1825, P. Colletta, 1860; History of Sicily from the Earliest Times, E. A. Freeman, 1891; Naples in 1799, C. H. D. Giglioli, 1903; Napoleonic Empire in S. Italy, R. M. Johnston, 1904; Naples, Cecil Headlam, 1927; Garibaldi, G. M. Trevelyan, 1933.

**Naples**, BAY OF. Semi-circular opening of the Mediterranean Sea, on the S.W. coast of Italy. Its maximum width is 20 m. between the capes of Miseno on the N. and Campanella on the S. It is backed by Mt. Vesuvius and Monte Sant' Angelo, and on its shores lie the towns of Sorrento, Castellamare, Pozzuoli, Torre del Greco, and Portici, besides the city of Naples. Off the N. extremity of the bay are the islands of Ischia and Procida, and on the S. is Capri.

**Naples Yellow.** Yellow pigment consisting essentially of lead antimonate. The shade depends on the proportion of lead oxide. Compounds of this type have long been used for colouring pottery and glass, e.g. 13th cent. Persian pottery, Babylonian tiles c. 600 B.C.

**Napo.** Large river of S. America. A tributary of the Amazon, it rises N. of the volcano Cotopaxi in Ecuador, and flows generally E.S.E. Near Huiririma it passes

into Peru—the boundary is disputed—and it falls into the Amazon some 50 m. below Iquitos. Its course is about 750 m., nearly 400 m. of which are navigable. Its important affluents include the Coca, Aguarico, and the Curaray. The town of Napo stands on its banks.

**Napoleon.** French gold coin. It was first issued by the great emperor, hence its name. Its



Napoleon. Obverse and reverse of gold coin of Napoleon III.  $\frac{1}{2}$  actual size

value was 20 francs, nominally 15s. 10d., and its weight 6.45 grammes. It replaced the louis d'or and is now obsolete. See Louis

armada seized Malta. Sailing thence, and evading Nelson's pursuit, he landed near Alexandria, took that city by storm, and overthrew the Mamelukes at the battle of the Pyramids.

#### Battle of the Nile

The occupation of Cairo without resistance completed his triumph, and he set to work, with Roman ingenuity and thoroughness, to organize his conquest. In the Institute of Egypt, divided according to subjects, he applied the energies of the French *savants*, whom he brought with him, to the task of exploring Egypt, developing its resources, and beginning a revival of learning. The discovery of the Rosetta Stone and many other relics of the age of the Pharaohs shed distinction on the whole enterprise and stamped it with the originality of Napoleon's genius. But Nelson shore asunder the scheme of a French Oriental empire. At the battle of the Nile, Aug. 1, 1798, he annihilated the French fleet and cut off Bonaparte from communication with France, but Napoleon succeeded in evading the British cruisers and landed in the south of France on Oct. 9, 1799, when the failure of his enterprise was still unknown, and the perils of an Austrian invasion roused discontent with the Directory.

Napoleon accordingly found it easy to concert with Talleyrand, Murat, and Lucien Bonaparte in the overthrow of the Directory. On the ruins he and his friends constructed a strongly personal system in which he, as first consul, held all the executive and much legislative power. But the new personal government ended the strife of factions, and effected much-needed changes by reconciling all but the irreconcilable royalists, by undertaking useful public works, by initiating the codification of French law, and by healing the schism in the Church by what was known as the concordat of April 18, 1802. He thus earned the title of the restorer of the altars, while he restored the prestige of French arms by his brilliant passage of the Alps, and the victory of Marengo. Britain, also, was fain to come to terms in the treaty of Amiens, March 27, 1802.

By instituting prefects in every department Bonaparte curbed democratic local government; while his foundation of the legion of honour paved the way for the subsequent restoration of an order of nobility. Other institutions due to his organizing genius were the bank and university of France.

The vain attempt of the royalists to foment a plot against his life, early in 1804, was cleverly

## NAPOLEON BONAPARTE

J. Holland Rose, Litt.D., Author of *The Life of Napoleon*

*This sketch of the great Corsican is followed by an article on the Napoleonic Campaigns. Further information will be found in the articles Europe, France; French Revolution. See the article Bonaparte and those on Napoleon's marshals, e.g. Murat; Ney; Soult; also Josephine; Nile, Trafalgar, etc.*

Born at Ajaccio, Aug. 15, 1769, the second surviving son of Charles and Letizia Bonaparte (*née* Ramolino), Napoleon came of an Italian stock, long domiciled in Corsica. Sent to school at Brienne, in 1785 he became lieutenant in the La Fère artillery regiment, and in various garrison towns displayed zeal for the service. He passed much of his time on furlough in Corsica during the early period of the Revolution, and his studies of Rousseau disposed him to accept the new democratic doctrines. Long and confused struggles with the Paolist or monarchist faction in that island ended in his discomfiture, and, with his family, long fatherless, he fled to France in June, 1793.

#### Royalist Rising of 1795

The new republic badly needed able officers, and the ability with which Napoleon organized and directed its artillery during the siege of royalist Toulon largely contributed to the recapture of that city. Though disgraced and imprisoned for a short time, after the fall of Robespierre, July, 1794, the young Jacobin regained his position in the army, and strengthened it during the campaign in the Italian Riviera. Another sharp setback to his fortunes failed to daunt him. His chance came in Sept., 1795, when the republic was confronted by a serious royalist rising

in Paris, which he helped to crush. Soon after, he was captivated by a fashionable young widow, Josephine de Beauharnais, whom he married.

#### The Italian Campaign

Napoleon then set out on his Italian campaign, in which he forced Sardinia to surrender, defeated a succession of Austrian armies, overran Tuscany, compelled the pope and the king of Naples to sue for peace, and then pushed back the Austrians and made the emperor a suppliant for terms. He crushed Venice and divided its territories between Austria and France. He began the Italian campaign an almost unknown general, received with murmurings by his subordinates. At the end of 1797 he had generals and troops absolutely at his disposal, he had ransacked the museums of Italy for their art treasures, which he sent to the Louvre, he had dictated terms to pope and emperor, and France acknowledged him as her greatest warrior.

The Directory at Paris urged him either to invade England or conquer the East. He chose the latter and secretly prepared a great armada. The military occupation of Rome and of the central cantons of Switzerland having provided part of the funds for the enterprise, he set sail from Toulon in May, 1798, with a large fleet. Strengthened by squadrons from Italy, the



countermined by him and his police; and the result was the capture of the chief plotters. The obsequious senate begged him to re-establish hereditary rule, in order "to defend public liberty, and maintain equality." In Aug., 1802, he had secured the consulate for life, with power to name his successor. On May 18, 1804, he became the emperor Napoleon I, and the coronation ceremony at Notre Dame on Dec. 2, at which the pope poured on the holy oil, showed that all the splendour and prestige of the old monarchy was to reappear. The last traces of the republican constitution soon vanished. These last successes of the autocrat were due to his military triumphs in the war which broke out, first with England, in May, 1803, and with Austria and Russia in the summer of 1805. The struggle with Britain in 1803-5 was entirely naval, ending at Trafalgar.

The years between 1805 and 1815 were passed mainly in warfare. Having received the surrender of Mack and 70,000 Austrians at Ulm, Napoleon occupied Vienna, and gained his greatest victory at Austerlitz. He then bestowed the title of king on some of his South German allies, declared the Holy Roman Empire at an end, and formed the confederation of the Rhine. Prussia rushed to arms in Sept., 1806, only to be utterly overthrown at Jena and Auerstädt, Oct. 14, 1806. When the tsar Alexander I came to her assistance, the Allies were completely routed at Friedland, June 14, 1807.

#### The Disaster of 1812

Master of Central and Western Europe, Napoleon now imposed his brother, Joseph, on the throne of Spain; Britain espoused the cause of the Portuguese and Spanish patriots, and, in the campaigns of 1808-13, Wellington struggled bravely against the armies hurled at him by Napoleon. Thenceforth the Russians and Germans took hope; and in 1812 Napoleon met with his great disaster in Russia.

Prussia and Austria rose up against him, and the campaign of 1813 resulted in his expulsion from Germany. Wellington, with British, Spanish, and Portuguese troops, made swift progress in the S., while in the E. the masses of the Allies closed in on Paris. On Aug. 29 they entered the city; Montmartre, last point of resistance, capitulated on Aug. 31. Under pressure from his own marshals, Napoleon signed a deed of abdication on April 11, 1814, in favour of his son. While the fallen emperor retired to Elba, the child and his

mother, Marie Louise of Austria, married to him in March, 1810, after he had divorced Josephine in Jan., 1810, came under the influence of the Hapsburg court.

The disputes of the powers over the spoils of conquest gave to Napoleon one more chance. He escaped from Elba in Feb., 1815, landed at Antibes, and in a few days entered Paris in triumph; his rival, Louis XVIII, fled into Belgium. But France was resolved to accept Napoleon only as a constitutional monarch, and the powers declared him an outlaw for disturbing the peace of Europe. The emperor's abdication followed Waterloo within a week, and, his effort to escape to America having failed, he surrendered to the British government, which sent him to St. Helena.

His last years were spent there with a few chosen comrades, whom he entertained with his unfailing flow of conversation, often captious and querulous, but always brilliant. He also compiled Memoirs and Notes of much interest but of doubtful veracity. Quarrels with Sir Hudson Lowe were often pushed to unreal and undignified extremes.

#### Why Napoleon Failed

We are now able to see that amidst transcendent qualities there were mingled pettier traits—a devouring egotism, a hard view of life as a series of calculations and chances; above all a profound contempt for the average man, and a disbelief both in religion and in the higher possibilities of progress of the human race. His mechanical view of life, abundantly proved in Gourgaud's Journal, reveals the inner reason why he failed to rise to the full height of that unparalleled opportunity offered by the years that followed the French Revolution. On May 5, 1821, Napoleon died at St. Helena. In 1840 his remains were taken to France and laid in a magnificent tomb in the Hôtel des Invalides. See Arcola; Ceniz; Code Napoleon; Invalides; Longwood.

*Bibliography.* N. at St. Helena, B. E. O'Meara, 1888; Histoire de N., P. Lanfrey, 5 vols., Eng. trans. 1894; Studies in Napoleonic Statesmanship, H. A. L. Fisher, 1903; N., the Last Phase, Lord Rosebery, 1904; Life, I. M. Tarbell, 1911; N. B., H. A. L. Fisher, 1913; The Man Napoleon, W. H. Hudson, 1914; N. and Waterloo, A. F. Becke, 1914. Lives, E. Ludwig, Eng. trans. 1930; F. M. Kircheisen, Eng. trans. 1931; H. Belloc, 1932; W. M. Sloane, 2 vols., new ed. 1939; The Return of N., H. Houssaye, Eng. trans. 1934; Letters, ed. J. M. Thompson, 1934; N., For and Against, P. Geyl, Eng. trans., 1949; N.B., His Rise and Fall, J. M. Thompson, 1952.

**Napoleon II.** Title given by French imperialists to the only son of Napoleon I, better known as the duke of Reichstadt (*q.v.*).

**Napoleon III** (1808-73). Emperor of the French. Charles Louis Napoleon Bonaparte was born in



Napoleon III,  
French emperor

Paris, April 20, 1808, the third son of Louis Bonaparte, by Hortense, daughter of Josephine, and was thus nephew to Napoleon I. On the fall of the empire Hortense took her sons into exile.

His elder brothers having died, the death of the duke of Reichstadt in 1832 made Charles Louis, or Louis Napoleon as he was now styled, head of the Bonapartes. Fostering the Napoleonic legend in France by a series of pamphlets and secret machinations, he organized a mutiny at Strasbourg in 1836, on the failure of which he fled to New York, only to return the following year to Switzerland. In 1838 he moved to London, and in 1840 risked a landing at Boulogne, but was arrested and sent to the fortress of Ham.

Making his escape from Ham in 1846, Louis Napoleon went to London, where he remained until the revolution of 1848. He then began to reap the fruits of his long years of conspiracy and propaganda. Elected a member of the republican assembly in June, he was elected president on Dec. 10 by a majority of five to one. On Dec. 2, 1851, he effected the *coup d'état*. From the 10 years' presidency conferred on him by plebiscite, it was an easy step to the imperial throne, which he ascended Dec. 1, 1852.

The following year Napoleon married Eugénie de Montijo, and established a court which has seldom been surpassed for its splendour and extravagance. He joined England in the Crimean War, 1854-56; he assisted Piedmont to turn the Austrians out of N. Italy in 1859, and gratified French ambition by obtaining Savoy and Nice. Meanwhile things were going from bad to worse. The enmity of the Roman Catholics after his interference in Italy, his failure to establish a Latin empire in Mexico, the increasing hostility of Bismarck, and the necessity of establishing the empire on a firmer foundation than that of popular applause, perplexed Napoleon, who behind his mask of inscrutability was weak and undecided. It was with half-hearted desperation that



1. Painted in 1791, said to be the earliest in existence.  
 2. By Baron Gros. During the first Italian campaign.  
 3. From the miniature by Chatillon. As Emperor.  
 4. By Vernet, now in the Tate Gallery, London. 5.  
 After the painting made in 1837 by H. Delaroche. 6. By  
 Francois, after Delaroche, 1845. After abdication,

April 12, 1814. 7. By Sir C. Eastlake. On the Belle-  
 rophon. 8. Death Mask, from a secondary mask,  
 taken by Dr. Antomarchi from that taken by  
 Dr. Burton immediately after Napoleon's death. At  
 bottom right-hand corner are two signatures of the  
 Emperor. above, Buonaparte; below, Napoleon

# **NAPOLEON BONAPARTE: PORTRAITS AND DEATH MASK OF THE EMPEROR**



he embarked on the Franco-Prussian War (*q.v.*). He joined his army July 28, 1870, but five weeks later came Sedan, his surrender to the Prussians, Sept. 2, and the end of the empire. Napoleon was held at Wilhelmshöhe Castle, Cassel, until the end of the war, when he joined the empress and their son at Chislehurst in England. There he died, Jan. 9, 1873, and was buried at Farnborough.

Napoleon failed principally because of contradictions in his outlook. He hankered after reviving the glories of France associated with the name which had brought him popularity, the undying Napoleonic legend. Yet being humane, cultured, and a dilettante, he wanted to rule in peace as the

arbiter of Europe, his dynasty accepted on equal terms by the oldest royalties. His only son, who was known as the Prince Imperial, is noticed under Eugène. *See also* Eugénie.

*Bibliography.* Works, 5 vols., 1856-60; N. the Little, V. Hugo, 1852; Histoire du Second Empire, P. de la Gorce, 1894; Lives, W. A. Fraser, 1895; A. Forbes, 1898; N. III at the Height of his Power, A. L. I. de Saint-Amand. Eng. trans. 1900; Rise of Louis Napoleon, F. A. Simpson, 3rd ed. 1929; The Phantom Emperor, O. Aubry, Eng. trans. 1930; N. III, J. Bainville, 1931; N. and Eugénie, E. A. Rheinhardt, Eng. trans. 1932; Conversations with N. III, Sir V. Wellesley and R. Sencourt, 1934; Napoleon III, A. Guérard, 1946.

## THE NAPOLEONIC CAMPAIGNS

*Supplementing the biography of Napoleon, this article gives an outline of the campaigns he directed. See also the articles on the various battles, e.g. Austerlitz; Friedland; Marengo; Waterloo; also Peninsular War*

Napoleon's first great campaign was in Italy in 1796. The W. and S. faces of the mountains of N. Italy marked the fronts of the opposing armies. On the W. face the armies neutralised each other, while the French army of Italy was extended along the mountains parallel to the coast between Nice and Genoa. In about an equality of numbers the allied Austrians and Sardinians held the passes. In one month Napoleon forced the Sardinians to a separate peace. He then pushed on against the Austrians and compelled them to make peace within the year, which left him conqueror of Italy. This great campaign was typical of his strategy: a well-thought-out plan, rapidly and ruthlessly carried out, his intentions veiled until the moment for execution, and then a swift and decisive blow.

On these lines 1798 saw his capture of Malta and his brilliant campaign in Egypt, but also the battle of the Nile, which cut him off from France. In 1799 he invaded Palestine, but was stopped at Acre by Sydney Smith. Sea-power defeated generalship, and, leaving his army behind him, he escaped to France.

Napoleon secretly collected an army in Switzerland, crossed the St. Bernard, and severed the Austrian communications. Melas, the Austrian commander-in-chief, on hearing of this blow, delayed for the surrender of Genoa, then fought at Marengo with his front towards Austria, was defeated, and surrendered with his whole army,

June 14, 1800, so that for the second time in five years Napoleon conquered Italy.

War broke out again in 1803 with Great Britain, whose government, by 1805, had built up a coalition with Russia and Austria. Napoleon had been ostensibly preparing to invade England, but he could never obtain the necessary uninterrupted command of the Channel. On Aug. 25, 1805, he decided to transfer the army to the Rhine, rapidly passed the Black Forest, and, before Mack in Ulm could be joined by the Russians, or realize his danger, he found himself surrounded, and capitulated with his whole army the day before Trafalgar. Napoleon followed up Ulm with the campaign of Austerlitz, where he defeated the Austrians and Russians on Dec. 2. The treaty of Pressburg, Jan. 1, 1806, forced Austria away from the second coalition.

Prussia had been hesitating whether to join the coalition, and, too late for success, on Oct. 1, 1806, she declared war. On Oct. 14 she was defeated at Jena and Auerstädt; on the 25th the French entered Berlin, and Prussia lay at Napoleon's feet. This might be considered the summit of his irresistible success. He had conquered Italy and Germany; Switzerland and Holland were in his hands; but England's sea-power set a limit to his European and Asiatic schemes of conquest. He had paralysed the older school of Austrian and German generals by his strategy and tactics.

The king of Prussia, though the greater half of his kingdom was in Napoleon's hands, did not sue for peace, and Sweden and Russia helped to carry on the struggle. The battle of Eylau, Feb. 7-8, 1807, has been claimed as a Napoleonic victory, but it was fiercely contested, and the French losses were equal to the Russian. At Friedland, June 14, Napoleon defeated Bennigsen.

### The Peninsular War

The Peninsular War, undoubtedly a beginning of his downfall, can only for a brief period be styled a Napoleonic campaign. In Nov., 1808, he defeated the Spanish insurgents in a decisive action, entered Madrid, Dec. 4, and then turned against Sir John Moore, who had ventured into the heart of Spain with 25,000 men. His retreat began in time to avoid Napoleon's overwhelming force, and the emperor, thinking the matter negligible, left the pursuit to Soult, Jan. 1, 1809, and turned his attention to Austria. Until Waterloo, Napoleon himself never met a British force, and never defeated one in a pitched battle.

The Austrians had been humiliated after Austerlitz, and awaited an opportunity for revenge. The archduke Charles took the field in April, 1809, and crossing the Inn between Braunau and Passau, got in between the French marshals, and had a great opportunity of crushing either wing, but the necessary rapidity of execution was still lacking in Austrian strategy. Napoleon took over the command on April 17 and defeated the archduke at Eckmühl on the 22nd. He pushed along the right bank of the Danube to Vienna, and then suffered his first real defeat at Aspern, or Essling, in an attempt to cross the Danube by the island of Lobau. Withdrawing to the island with heavy loss, he refused to retreat and, calling up every available man, badly defeated the Austrians at Wagram (July 5-6) and forced them to another peace.

From this campaign until 1812 Napoleon did not personally take the field. The Spanish War was left to his marshals, who were not equal to Wellington in generalship. But in 1812 he had decided on the conquest of Russia, and by the middle of June he had assembled on the banks of the Niemen an army of 363,000 men, of whom only one-third were French.

On June 24, he moved on Vilna, but the Russians fell back before him, and the grand army began its sufferings from heat and

cholera. Smolensk was taken with loss on Aug. 16-17. Napoleon hesitated as to postponing his victory till the next year, but his former sound judgements were becoming dimmed by his belief in his own infallibility, so he pushed on, and on Sept. 7 fought the sanguinary battle of the Borodino. It was not decisive, but the Russians left the road to Moscow clear, and Napoleon entered that city on Sept. 14, only to be welcomed by a three days' fire which laid the deserted city in ruins. He began the retreat on Oct. 19 with 115,000 men. Forced by pressure from the S., he was obliged to retreat by his line of advance, already denuded of supplies, and his army perished from hunger and cold. The crossing of the Beresina on Nov. 27-28 completed the disaster.

By supreme efforts Napoleon raised another army by March, 1813, and moved it to the Elbe. The Russians, now joined by the Prussians, had moved into Germany, the combined army being under Wittgenstein. Napoleon assumed command on April 25 at Erfurt, and as usual decided to attack. At Lutzen, May 2, Wittgenstein began an attack on the French advanced guard, while he directed the bulk of his forces against Napoleon's right and rear. This turning movement was detected and repulsed by Napoleon.

At Bautzen, May 21-22, he again drove back Wittgenstein, but without conspicuous success; and immediately after concluded an armistice more to the Allied advantage than to his own. In the autumn campaign, he had to face a far stronger combination of Austrians and Swedes, in addition to the now reinforced Russians and Prussians. Undaunted, he would not fall back on France, but, making his headquarters at Dresden, where he defeated Schwarzenberg on Aug. 27, he decided to defend the line of the Elbe, undoubtedly a strategical mistake. His men were not fit to carry out his plans, and his plans were not so clear as they used to be; and in the "battle of the nations" at Leipzig, Oct. 16-19, he was defeated.

Wellington was bringing pressure from the S.; each conquered nation in turn, as it escaped from Napoleon's grasp, added its quota to his foes; and the fighting in Champagne in 1814 was the despairing effort of the lion at bay. In many ways it was one of his finest efforts. Schwarzenberg was advancing from Basel, and Blücher on the line of the Moselle, each

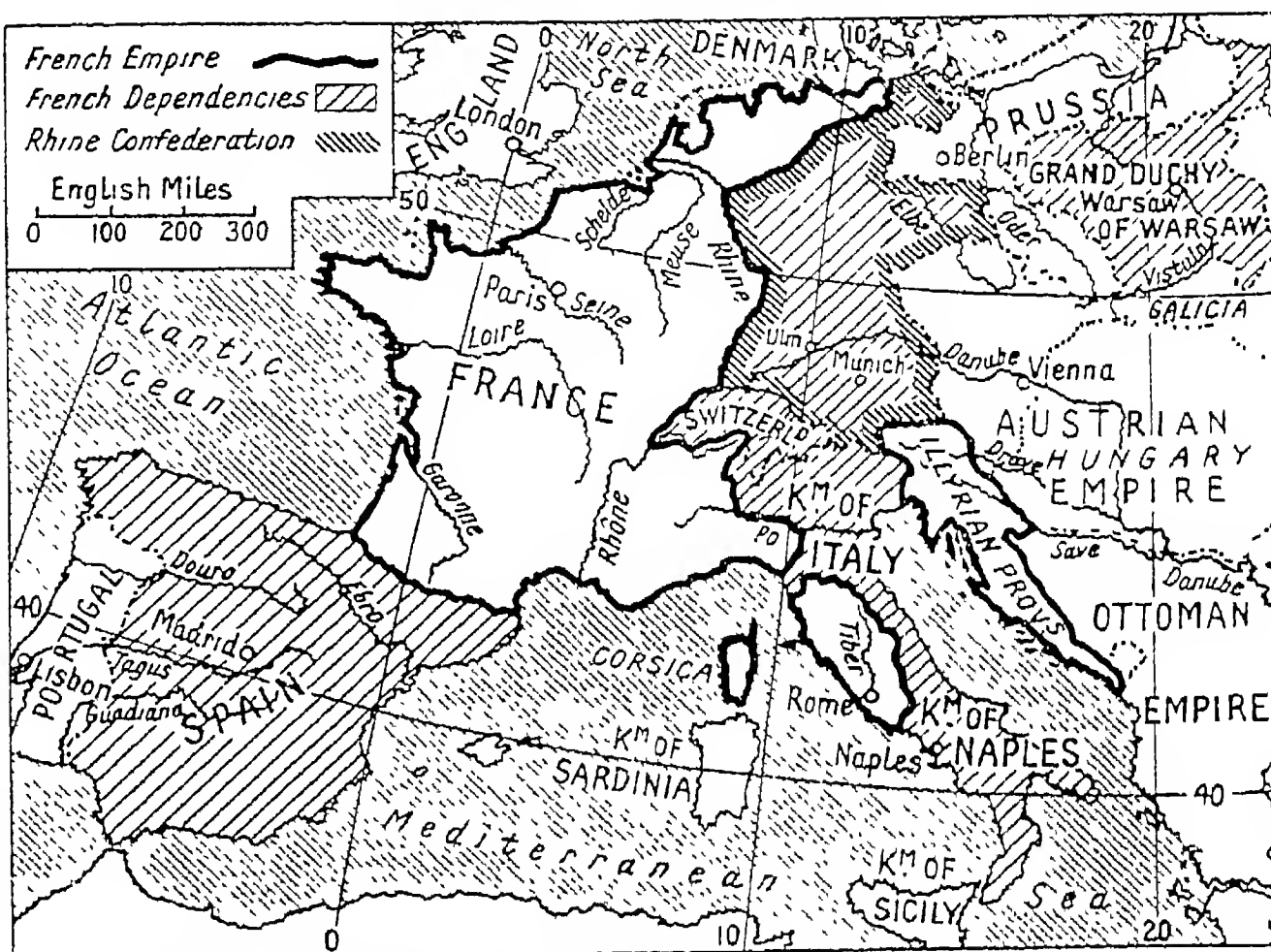
with an army superior in numbers to Napoleon's; while Bülow and Winzingerode were threatening from the N., Wellington from the Pyrenees, and Murat from Italy. Generally, Blücher's advance on Paris was along the Marne, while Schwarzenberg moved down the Seine, and Napoleon made superb use of these converging rivers.

Leaving his marshals to hold the crossings, he kept his main body between them, and came to the assistance of the side most immediately threatened. Thus he drove back Blücher from Brienne, Jan. 29, defeated him at La Ferté on the Marne, Feb. 11, and again at

Corsica, near Ajaccio, it has an orbicular structure which makes it, when cut and polished, a beautiful ornamental stone. From many points radiate concentric rings of dark and light coloured stone, the light consisting of feldspar and the dark of hornblende.

**Napo Pastaza.** Prov. of Ecuador, formed in 1925 by the division of Oriente (*q.v.*) region.

**Nappe.** In geology, a large recumbent fold of rock which has been driven more or less horizontally forward along a thrust plane. In the Alps such sheared recumbent folds occur one above another, and erosion has carved



Napoleonic Campaigns. Map showing the boundaries of the European states in 1812, as arranged by Napoleon

Vauxchamps, Feb. 14, and so stopped his direct line of advance on Paris, but Winzingerode was now at Soissons. Napoleon turned S. and drove Schwarzenberg, whose advance had reached Mormant, to the left bank of the Seine, Feb. 17, and towards Troyes. Napoleon then moved to meet Blücher on the Marne, and, driving him N. to Laon, defeated his left wing at Reims, March 13. Schwarzenberg, with Blücher, moved on Paris, which capitulated March 29.

In 1815 Napoleon had again raised a French army to defy Europe. With his usual rapidity, he defeated the unprepared Prussians at Ligny, June 16, but Ney failed to drive Wellington's advanced guard from Quatre Bras, and the obstinate Blücher, instead of retreating E. on Liège, moved N. to Wellington on the field of Waterloo.

**Napoleonite** OR **CORSITE.** In mineralogy, a variety of diorite. So called from its occurrence in

the valleys and peaks out of the pile so built up. See Fault; Fold.

**Naramsin.** King of Akkad, N. Babylonia. Neo-Babylonian tradition made him son and successor of Sargon I, but there were at least two reigns between them. Nabonidus's record that Naramsin's foundation inscription, unearthed at Sippar about 550 B.C., had been hidden for 3,200 years, would date his reign 3750 B.C. This is now known to be too early, and Naramsin is to be given a date soon after 2300 B.C. His victory stela from Susa (called Shushan in the Bible) is a supreme example of early Mesopotamian art.

**Narasinha** OR **NARSINGH.** In Hindu mythology, one of the nine incarnations of Vishnu (*q.v.*). He appeared in the form of a man with the head and paws of a lion.

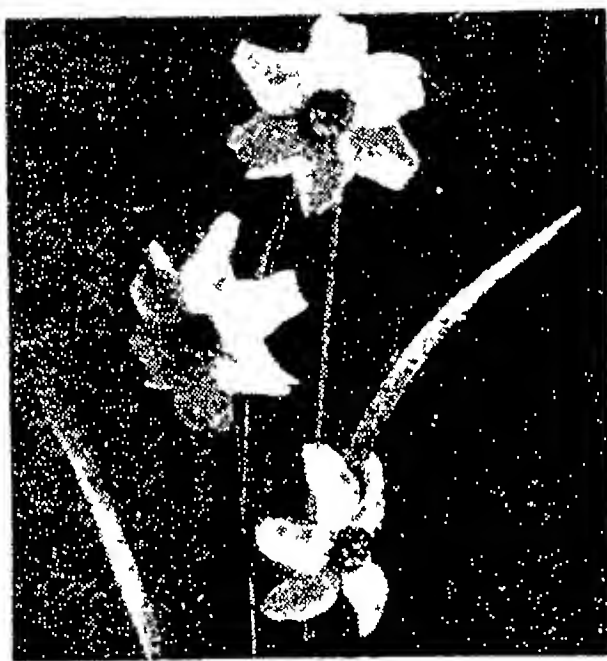
**Narayanganj.** Town of Pakistan, in the Dacca dist. of E. Bengal. It is a rly. terminus S.E. of Dacca on the Dhaleswari,



distributary of the Brahmaputra, and is a centre for the traffic in rice and jute. Pop. 56,000.

**Narbada** OR NERBUDDA. River of the N. Deccan, India. It rises near Mt. Amarkantak in the Maikal range, the E. end of the Satpura Mts., and flows almost due W. between the Satpuras and the Vindhya Mts. Its mouth is in the Gulf of Cambay, an inlet of the Arabian Sea. It is 800 m. long. Near Jubbulpore the river winds in a gorge between cliffs of white marble, the noted Marble Rocks.

**Narberth.** Town of Pembroke-shire, Wales. About 19 m. S.W. of Carmarthen, and 9½ m. N.W. of Tenby, it has a rly. station. It has fragments of a 13th century castle dismantled by Parliamentarians after unsuccessful defence by Royalists in the Civil War. The parish church has a fortified tower. Pop. (1951) 1,053.



psychological condition in which an individual's love remains concentrated on himself.

**Narcissus.** Small genus of bulbous herbs of the family Amaryllidaceae. They are natives of Europe, N. Africa, N. and W. Asia. One species only, the daffodil (*N. pseudonarcissus*), is indigenous in Britain, though the jonquil (*N. biflorus*) and the pheasant's-eye (*N. poeticus*), escaped from gardens, have become naturalised here and there. The rush-like or strap-shaped leaves all spring directly from the bulb, and the flowers are borne on tall scapes, either singly, as in the daffodil, or forming an umbel, as in the polyanthus narcissus (*N. tazetta*). There are numerous garden variations and hybrids in existence.

For bedding purposes vast numbers of the bulbs in a resting state are imported from the bulb-



Narcissus. Left, flowers of pheasant's-eye, *N. poeticus*; right, polyanthus narcissus, *N. tazetta*

**Narbonne.** City of France. In the dept. of Aude, it is 93 m. E. of Toulouse, and is connected with the Mediterranean by a canal about 5 miles long. In Roman days it was known as Narbo, and was the metropolis of Southern Gaul. In the 12th cent. a commercial rival to Marseilles, it produces a well-known red wine and a famous honey, and has also salt, sulphur, and porcelain works. The Gothic church of S. Just, with a lofty choir, was formerly a cathedral. Narbonne, occupied by the Germans during the Second Great War, in Nov., 1942, was liberated by French troops on Aug. 31, 1944, in a spectacular advance from the Rhône. Pop. 29,975.

**Narcissus.** In Greek mythology, a beautiful youth, beloved of the nymph Echo, whose passion he could not return. Echo died of grief, and as a punishment the gods caused Narcissus to fall in love with his own reflection in a spring and pine to death. He has given his name to narcissism, a

farms of Holland; and great quantities of cut flowers are sent from the Scilly Isles. The bulbs should be planted as early as possible in the autumn, to allow of the full development of roots before winter. They are not particular as to soil, but will succeed best in a deep loam, especially if a layer of sand is placed beneath each bulb at the time of planting.

**Narcolepsy** (Gr. *narkē*, numbness). Condition in which a patient has an irresistible desire to sleep. The "attacks" may come on at any time and are usually of short duration. During an attack the sufferer can be roused as if from normal sleep. Usually no cause is found, but sometimes narcolepsy results from head injury. Amphetamine or ephedrine may lessen the attacks.

**Narcotics** (Gr. *narkē*, numbness). Drugs which produce analgesia or abolish pain without necessarily inducing sleep or unconsciousness. They include opium, morphia, and diamorphine.

**Narcotine** (Gr. *narkē*, numbness). Alkaloid of opium. First prepared by Derosne of Paris, in 1803, it occurs in opium in an amount varying from one to ten p.c., and is obtained as a by-product in the manufacture of morphine. Narcotine has little narcotic action, and is not now used in medicine.

**Nardò.** City of Italy, in the prov. of Lecce, Apulia. Situated 11 m. by rly. W. of Zollino, a junction on the Gallipoli line, it has a cathedral and many churches. Its main industry is textiles. Near the city are olive plantations and vineyards. Pop. 14,000.

**Nardoo** (*Marsilea drummondii*). Aquatic flowerless herb of the family Marsileaceae. It is a native of Australia. One of the water-fern group, it has a creeping root-stock, and its fronds take the form of a long, erect stalk, with four leaflets at the summit, arranged crosswise, and sensitive to light. The spore capsules are of two kinds: one containing a single macrospore, the other numerous microspores. They are contained at first in hard shells known as sporocarps, which the aborigines pound into a kind of flour.

**Narenta** (Slav. *Neretva*). River of Yugoslavia. It rises near the border of Montenegro, flows N.W. nearly to Ostrožac, and then S. through the largest valley from the Dinaric Alps to the Adriatic Sea past Mostar. The valley provides a comparatively easy route from the Adriatic coast to Sarajevo. A rly. follows the valley to Konjic. Of the total course of 140 m. only 10 m. are navigable.

**Nares, OWEN RAMSAY** (1888-1943). British actor. Grandson of W. R. Beverley, scene painter, he was born Aug. 11, 1888, at Maiden Erlegh, Berks, and educated at Reading. He first appeared on the professional stage at the Haymarket Theatre, London, in *Her Father*, 1908. Among his earlier parts were Karl in *Old Heidelberg*, the title-rôle in *Peter Ibbetson*, Gavin Dishart in *The Little Minister*, and the clergyman in *Romance*. A handsome appearance and polished style made him one of the most popular actors of his day, though it took him some years to establish his reputation as something more than a "matinée idol." Later plays included *If Winter*



Owen Nares, British actor

Comes, 1923; The Fanatics, 1927; Call it a Day, 1935; Robert's Wife, 1937; Rebecca, 1939. Nares acted in numerous films from 1913 onwards. He died at Brecon, after touring military camps, July 31, 1943.

**Narew.** River of Russia and Poland. It rises in the forest of Bielowiez, N. of Pruzhani, and flows W. and S.W. for some 200 m. to join the Bug at Seroek, 18 m. N. of Warsaw. The combined streams then run W. 20 m. to join the Vistula at Nowy Dwor. When the Germans launched their offensive against the Russians in the First Great War in July, 1915, the Narew formed the main line of defences screening Warsaw against Hindenburg's advance. After prolonged and bitter fighting, the Germans crossed on Aug. 15, but Warsaw had fallen already. After the German invasion of Poland in 1939, the Polish army was forced back to a line formed by the Narew, Vistula, and San, and the German advance was temporarily held by the fortress of Modlin. German troops forced a crossing of the Narew N.E. of Warsaw, which fell on Sept. 27. The Narew was again the scene of heavy fighting when it was crossed by the Russians in the autumn of 1944. Poland's 1945 frontier left its upper reaches in Russia.

**Nariño.** Maritime dept. of S. Colombia, S. America. It is bounded N. by Cauca dept. and S. by Ecuador. Although traversed by the Andes, it has many fertile tracts, yielding sugar, cocoa, rice, potatoes, and cereals. Stock raising is a prominent industry, and gold is mined. Manufactures include Panama hats and footwear. Over 500 m. of rly. serve the dept., which has many good roads. The capital is Pasto (*q.v.*). Area, 11,553 sq. m. Pop. (1951) 569,790.

**Nariño, ANTONIO (1765-1823).** Colombian statesman. He was born at Santa Fé, and as a young man incurred the displeasure of the authorities by translating into Spanish the decree of the French assembly concerning the rights of man and citizenship. After spending some time in Europe, he returned to Colombia and took part in the rising against Spain. For a short time in 1811, and again in 1812, he was dictator. In an ensuing civil war he was defeated and sent in 1814 to Spain, where he remained in prison until 1820. He died at Leiva, Dec. 13, 1823.

**Narni.** City of Italy, in the prov. of Terni. It stands on the Nera, the ancient Nar, 66 m. by

rly. N. of Rome. Picturesquely situated on a rocky eminence, 1,000 ft. alt., with an ancient



Narni, Italy. Piazza Priora, with the 11th century cathedral on the left; right, façade of the 14th century town hall

castle, now used as a prison, it has a cathedral dating from the 11th century. There are mineral springs in the vicinity. A trade is carried on in chemicals and indiarubber goods. Roman remains include a remarkable bridge built by Augustus, and an aqueduct that brought water from a spring 15 m. distant. A medieval bridge was destroyed by the Germans in the Second Great War, in which Narni fell to the British on June 13, 1944. The ancient Nequinum, or Narnia, it has been a bishop's see from 369. Pop. (1951) 21,061.

**Naroch.** Lake of White Russia S.S.R. It is 80 m. S.S.E. of Daugavpils, Latvia, and is drained by the river Naroch. In the First Great War the ground between lakes Naroch and Vishniev was the scene of heavy fighting in March and April, 1916. After early German successes, Russian reserves made a flank attack, causing a general withdrawal by the enemy. The territory was seized by the Poles from the Bolsheviks in 1921, and incorporated in the U.S.S.R. after the Second Great War.

**Narragansett Bay.** Inlet on the S.E. coast of Rhode Island, U.S.A. It extends inland to the mouth of Providence river, a distance of 25 m., and is from 4 m. to 8 m. broad. It contains several islands, among them Conanicut, which forms the lower portion into two channels, Prudence Island, and Rhode Island, which separates it from Sakonnet river.

Providence stands at its head, Newport on its E. shores, and Narragansett Pier, a fashionable seaside resort, below its entrance on the opposite side to Newport.

**Narrows, THE.** Name given to the narrowest portion of the Dardanelles Strait. It is less than a mile wide between Kilid Bahr and Chanak. See Dardanelles, Attacks on the.

**Narses** (c. 474-568). General and administrator under the Roman emperor Justinian. A Persarmenian eunuch, he rose to high position at court, and for some time shared the command in Italy with Belisarius. His own military triumphs included a series of victories over the Goths, Alamanni, and Franks, as a result of which Italy was recovered as a province of the empire, governed by Narses himself from Ravenna. His administration, however, was harsh, and in consequence of a deputation, sent to Justinian to complain, Narses was recalled. In revenge he intrigued with the Lombards.

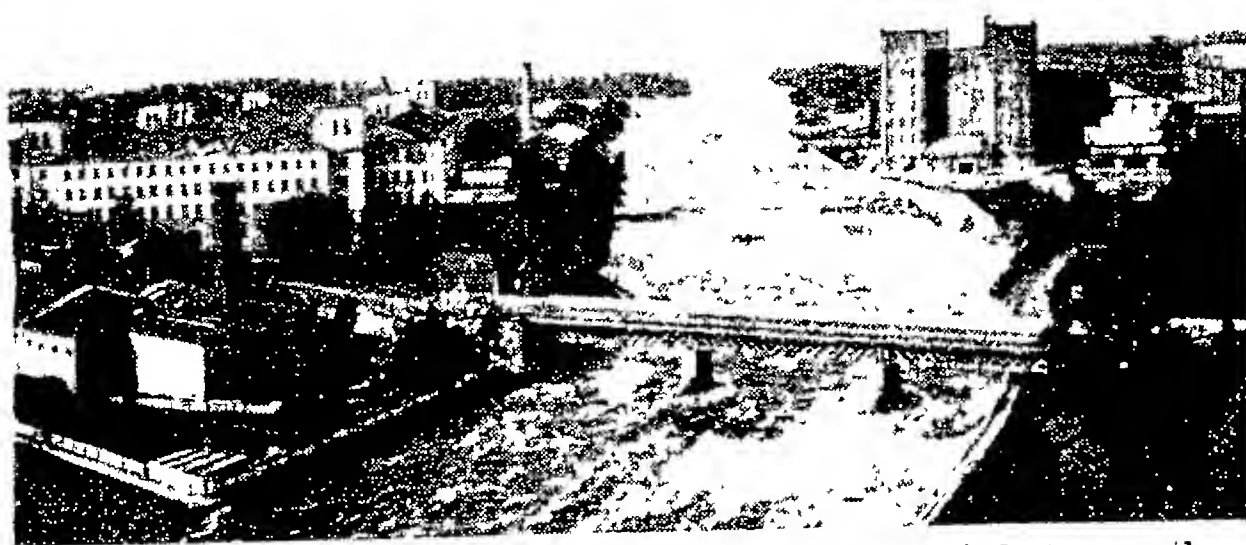
**Narsingarh.** A town of Madhya Union, India, 20 m. N.W. of Bhopal. It was formerly the capital of a princely state, area 731 sq. m., which in 1948 was merged in Madhya Bharat, itself merged in Madhya Union in 1956. Pop. (est.) 12,500. The state, founded in 1681, lay on the northern slopes of the Vindhya Hills.

**Narsingpur.** A district of Orissa, India, formerly a princely state founded 1292, and established by treaty in 1803. It is situated N. of the Mahanadi and S. of the eastern detached portion of Angul. The state, area 199 sq. m., one of the Orissa feudatory states, was merged in Orissa in 1948; the raja resided at Narsingpur village.

**Narthex.** In early Christian architecture, the vestibule or porch of a basilica. It is within the main entrance at the opposite end to the altar and sanctuary. It was originally used to accommodate Christian converts who had not passed the stage of initiation. The term has been extended to all church vestibules, but the traditional type of narthex is a room as long as the width of nave and aisles combined, with doors leading into the latter, and others to the atrium or outer court. See Basilica; Cathedral.

**Narva.** Town of Estonia S.S.R. It is 75 m. W. of Leningrad, and stands on the Narva, 7 m. from its mouth in the gulf of Finland. It is connected with Leningrad by rly. The buildings include the





Narva, Estonia S.S.R. View of the cotton mills, a main industry, on the bank of the River Narva

cathedral, the town hall, and the arsenal. The industries are tanning, flax, cloth and cotton mills, and the making of rope. The fishing is important. Founded in the 13th century, Narva was the property of Denmark and the Teutonic Order before passing to Sweden. The Swedes improved its fortifications, and in 1700 it was besieged, in vain, by the Russians. In 1704, however, Peter the Great captured it, and it was part of Russia until the state of Estonia was formed after the First Great War. The Russians erected a fortress called Ivangorod, on the other side of the river, but it fell into disuse. Pop. 25,000.

The battle of Narva was fought between the Russians and the Swedes, Nov. 30, 1700. The Russians were besieging the fortress, then in the possession of the Swedes, when Charles XII advanced to its relief. Peter the Great himself did not await his formidable foe, but fled to Novgorod. The Swedes, 8,000 strong, attacked the Russians behind their entrenchments, in a snowstorm, and in an hour had broken their left wing. Charles gained a decisive victory.

During the Second Great War, Narva was occupied by German troops in August, 1941, and captured by the Russians July 26, 1944.

**Narvik.** Seaport of Norway. It stands 75 m. from the sea on the almost land-locked Ofot fjord, a branch of the narrowing Westfjord. Above and below the port are the small but deep Rombaks and Herjangs fjords. The terminus of the rly. to Gellivare (*q.v.*) and Lulea (*q.v.*) in Sweden, and situated 30 m. N.N.E. of Pernitz, it has extensive quays and exports Swedish iron ore. Pop. 10,000.

**NARVIK IN THE SECOND GREAT WAR.** Narvik was essential to German war potential as the port for the iron ore of the Gellivara

and Kiruna mines. Sailing along a narrow corridor inside Norwegian territorial waters, the ore ships were virtually outside the British blockade. It was the German determination to ensure iron supplies from Narvik, and the British decision to terminate them, that precipitated Norway into the war.

On April 8, 1940, the Royal Navy laid minefields at the entrance to the West fjord and in the corridor used by the ore ships with the object of forcing them outside territorial waters. Next day Germany invaded Norway. In preparation for that event a 10,000-ton ship, the *Norge*, ostensibly a whale-oil tanker but actually a camouflaged German troopship, had put into Narvik two days earlier accompanied by several merchantmen. After some desultory fighting with the Norwegian garrison, the troops from the ships seized Narvik. Later in the day they were reinforced by a convoy of supply ships and transports escorted by six destroyers and a submarine. The passage of this convoy was opposed by two Norwegian coast-defence ships, both destroyed before they could seriously damage the enemy.

On the afternoon of April 9 the 2nd British destroyer flotilla, which, after covering the previous day's mine-laying, was on patrol at the entrance to West fjord, was ordered by the Admiralty to attack the enemy force in control of Narvik. The flotilla consisted of the *Hardy*, *Hotspur*, *Hostile*, *Havoc*, and *Hunter*, each mounting four 4.7-in. guns, and was commanded by Capt. Warburton-Lee. As the enemy vessels were all more heavily armed than the British and supported by newly-installed German shore batteries, Warburton-Lee signalled the Admiralty the superior German strength, but added that he intended to attack at dawn on April 10. The Admiralty placed on him the onus of deciding to attack or not.

At 4.30 a.m. on April 10, after a hazardous passage of the 60 m. long West fjord in a blinding snowstorm, the British flotilla stood outside Narvik, and the *Hardy* entered the harbour and opened fire with guns and torpedoes against the German transports and destroyers there. The rest of the British destroyers followed and a desperate action ensued. The *Hardy* was repeatedly hit by ship and shore batteries, and her commander was killed. Finally, a shell put her engines out of action and she was run aground. When the *Hunter* had also been sunk, and the *Hotspur* and the *Hostile* seriously damaged, the remaining destroyers withdrew. The enemy was in no condition to follow, having lost one destroyer sunk and three on fire, besides six supply ships sunk. Warburton-Lee received a posthumous V.C.

The surviving British ships then blockaded the port until April 13, when they were joined by the battleship *Warspite* and the des-



Narvik, Norway. Sketch map showing the sea approach to Narvik, scene of an historic twofold British naval action in the Second Great War

troyers Cossack, Eskimo, Punjabi, Bedouin, Foxhound, Forester, Kimberley, Icarus, and Hero. Supported by squadrons of the fleet air arm, the British force silenced the shore batteries, and after a four-hour battle sank the German destroyers in Narvik harbour. Naval parties then went ashore.

Although the Germans' seaward defences at Narvik had been destroyed, it was impossible for the Allies to hold the port unless they could advance from the land, as the surrounding districts were already in the hands of strongly entrenched enemy forces. The capture and occupation of Narvik depended, therefore, on the advance of the Allied military forces from Namsos, nearly 400 m. to the S. When the Allies were obliged to re-embark at Namsos, certain formations delayed by bad weather and impassable roads had reached the vicinity of Narvik, and on May 26 assembled on the N. shore of Rombaks fjord preparatory to an assault on Narvik.

Under covering fire from British warships, French and Polish troops crossed and established bridgeheads, whence Norwegian troops attacked the Germans entrenched on the mountains to the E., from where the town was to be forced. After heavy fighting, the enemy was cleared from his positions, but the advance was delayed by a devastating German air raid which laid much of the town in ruins.

At midnight on May 26 the Allies attacked the town and captured it after heavy losses. The fall of Narvik and the subsequent Allied advance along the rly. to the Swedish frontier promised to be a turning point in the Norwegian campaign; but the deterioration of the Allied situation in France and Flanders made imperative the withdrawal of the Allied forces from Narvik, which was evacuated on June 10 after the harbour installations had been destroyed. The evacuation of the port ended all organized resistance in Norway. See Norway; Second Great War. Consult The Invasion of Norway, H. Lehmkuhl, 1940.

**Narwhal** (*Monodon monoceros*). Cetacean belonging to the porpoise group. It inhabits the Arctic Ocean, and is distinguished by the spirally grooved, tapering tusk of the male, often over 7 ft. long, the animal itself being from 12 ft. to 15 ft. in length. The tusk usually

grows from the left upper jaw, and its fellow on the other side is rudimentary and does not protrude from the jaw, though specimens have been found with two long tusks. In other respects the narwhal has the general form of a small whale. Found in small schools of from 10 to 20 individuals. It is believed to feed upon cuttles, crustaceans, and small fish. Its oil and the fine ivory obtained from the tusk are valuable. See Whale.

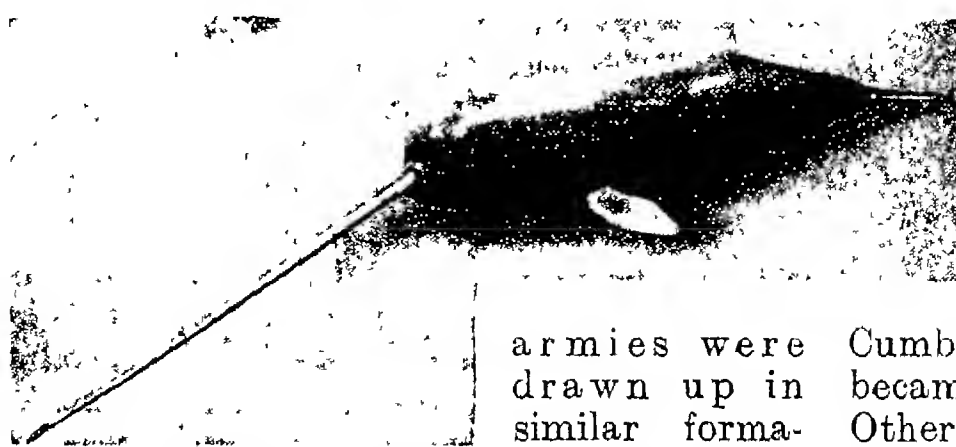
**Nasal Index.** The percentage ratio of the breadth to the length of the human nose. On the skull, the breadth is measured across the anterior orifice, the length measured from the junction of the nasal and frontal bones to the sill of the nasal aperture; on the living subject, the breadth is taken across the wings, the length from the root to the junction with the lips. Narrow noses, i.e. with nasal index below 47 (skull) or 70 (living subject), termed leptorrhine, are characteristic of peoples inhabiting cooler and dryer climates such as the Europeans and N. Africans. Broad noses (chamaerrhine or platyrrhine), with a nasal index of more than 51 (skull) or 85 (living subject) characterise Africans south of the Sahara, Melanesians, Negrillos, and Negrillos, Australian aborigines, and others who are adapted to living in hot moist conditions.

**Naseby, BATTLE OF.** Fought June 14, 1645, during the English Civil War. The king's cause was losing ground, and his army of 7,500 men was being followed by 13,000 parliamentarians under Fairfax and Cromwell from Daven-try towards Leicester. At Broad-moor, Northants, just before entering Leics, Charles decided to fight. His foes fell back and took up a position on some high ground just N. of Naseby, a village 7 m. S. of Market Harborough. Both

put to flight the opposing horsemen, whom they recklessly pursued towards Naseby. While the royalist infantry pushed the enemy back, the day was turned by Cromwell's troopers, who, after routing the horse opposed to them, fell upon the flank of the infantry. These were thrown into confusion, and the king, who was with the reserve, gave them the word to charge. But the earl of Carnwath, realizing the situation, seized the bridle of his horse and turned it from the field, the attendant troops quickly following this example. The parliamentary foot rallied, and, with Cromwell's horse, soon completed the victory. Rupert, returning from his pursuit, could do naught but follow Charles to Leicester. The royalists lost about 1,000 killed and 5,000 prisoners, and the king's private papers were also seized and afterwards published. See Charles I; Civil War, The.

**Nash, JOHN** (1752–1835). British architect. Born of Welsh stock, he was apprenticed to Sir Robert Taylor, and after abandoning architectural work retired to an estate near Carmarthen, but resumed his practice about 1793. By 1814 he had become favourite architect of the prince regent. It is with his share in London architectural improvements that his name is inseparably connected. He designed terraces along the edge of Regent's Park, adopting the design (previously evolved by the Adam brothers) of uniting several houses in a single façade, faced with stucco. Park Crescent and square, with Albany St. and other adjoining streets were also erected from his designs. After projecting the Regent's Canal, he designed Regent St., and All Souls' Church, Langham Place. Other London buildings included the Haymarket Theatre, Suffolk Galleries, United Services Club, E. wing of Carlton House Terrace, and the repairing and enlarging of Buckingham House (later Buckingham Palace), including the entrance archway which, removed in 1850–51 to

Cumberland Gate, Hyde Park, became known as Marble Arch. Other important work consisted of alterations and additions to the Pavilion, Brighton. He retired about 1831 and died at E. Cowes Castle, Isle of Wight May 13, 1835. A study by J. Summerson appeared in 1935. See Architecture illus. p. 571 (No. 7); Marble Arch illus.; Regent Street.



Narwhal. Male specimen with long, tapering tusk

armies were drawn up in similar formation, the foot in the centre, with cavalry on both flanks and a reserve behind.

The royalists opened the fight by crossing the intervening valley and charging up the hill. On one wing, with Rupert leading, they



**Nash, JOHN NORTHCOTE** (b. 1893). British painter. Younger brother of Paul Nash (*v.i.*), he was born in London, April 11, 1893, and educated at Wellington. In 1918 he was commissioned by the Imperial War Museum to paint war pictures. His early work was influenced by Cubism, but he later developed a naturalistic style, and became known for landscapes and woodcuts. A member of the London Group (*q.v.*), A.R.A. 1940, R.A. 1951, he taught at the R.C.A. from 1934. He is represented at the Tate gallery, the Victoria and Albert Museum, London, and provincial galleries.

**Nash, PAUL** (1889–1946). A British painter. He was born in London, May 11, 1889, and studied



Paul Nash,  
British painter

at the Slade School. His early work showed the influence of Blake and Rossetti in its visionary character, but about 1911 he exhibited small drawings of gardens, trees, and ponds. During the First Great War he came into prominence with a collection of drawings and paintings of the Ypres salient, the most representative being *The Menin Road*, now in the Imperial War Museum. In the Second Great War he exhibited remarkable studies of smashed aircraft. Professor of design at the

R.C.A., 1924–25, he is represented at the British Museum, Tate gallery, Manchester art gallery, and Musée de la Guerre, Paris. His later work was notable for a metaphysical or apocalyptic quality owing something to the influence of Blake, but based on forms observed in natural history, *e.g.* shells, flints, fungi, in austere colour. He regularly exhibited with the London Group. He died July 11, 1946. His autobiography, *Outline*, was published in 1949.

**Nash, RICHARD** (1674–1762) English dandy known as Beau Nash. Born at Swansea, Oct. 18, 1674, the son of a successful glassmaker, he was educated at Carmarthen Grammar School and Jesus College, Oxford. He was for a brief time in the army, and then entered the Inner Temple, 1693. He, however, took to gambling and living by his wits. In 1705 he went to Bath, then beginning to be a fashionable resort, and set about organizing its attractions, coming to be regarded as the arbiter of affairs and titular master of the ceremonies. He died Feb. 3, 1762, and was buried in Bath Abbey. See *Life of Richard Nash* O. Goldsmith, 1762.



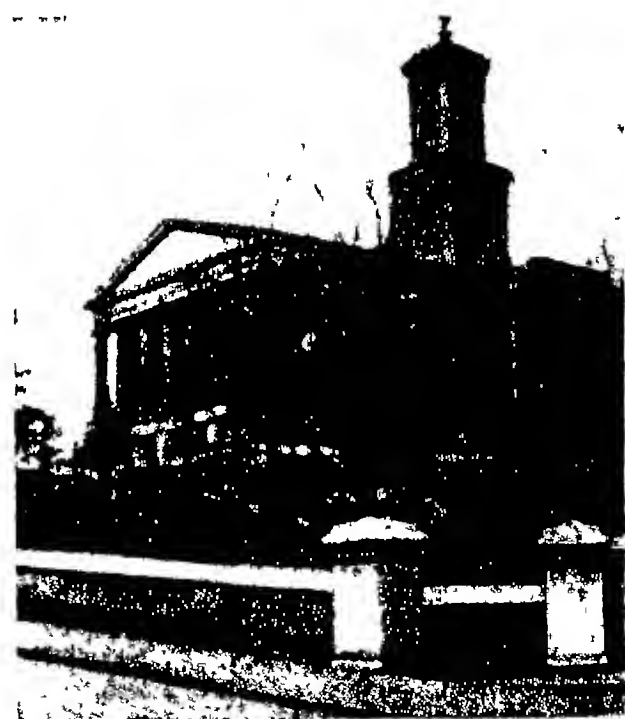
Richard Nash,  
18th century dandy

**Nashe OR NASH, THOMAS** (1567–1601). English satirist, playwright and critic. Born at Lowestoft, he was educated at St. John's College, Cambridge, graduating in 1586. After travel in France and Italy, he became a prominent figure in literary London, a friend of Greene, Lodge, Marlowe, and others. He took the anti-Puritan side in the Martin Marprelate controversy, engaged in a paper war with Gabriel Harvey (*cf.* his *Have with you to Saffron Walden*, 1596), completed Marlowe's *Tragedy of Dido*, 1594, and was imprisoned for several months in the Fleet on account of his suppressed comedy, *The Isle of Dogs*, 1597. His novelette, *The Unfortunate Traveller*, or

*The Life of Jacke Wilton*, 1594, started the Surrey and Geraldine legend, and forms a link between the picaresque fiction of Spain and the novels of Defoe and Smollett. His works have been edited by R. B. McKerrow, 4 vols., 1904–10.

**Nashua.** City of New Hampshire, U.S.A., one of the county seats of Hillsboro co., and the state's largest city. It stands on the Merrimac at its confluence with the Nashua, 15 m. S. of Manchester, and about 40 m. N.W. of Boston, and is served by the Boston and Maine rly. and an airport. Its varied industries include cotton goods, textiles, blankets, shoes, iron and steel products, hardware, asbestos, and paper products. Among the city's pioneer factories was one founded by the inventors of the first instruments for shearing and clipping animals and of barbers' clippers. One quarter of Nashua was destroyed by fire in 1930. Settled in 1655 it was incorporated as Dunstable in 1673, and received its present name in 1836, becoming a city in 1853. Pop. (1950) 34,669.

**Nashville.** Second largest city of Tennessee, U.S.A., the state capital, and the co. seat of David-



Nashville, Tennessee. The state capitol, built on a hill overlooking the town

son co. A port of entry, it stands on both banks of the Cumberland river, 185 m. S. by W. of Louisville, and is served by the Louisville and Nashville and other rlys., and by steamers, and an airport. It is in the midst of fertile country, producing cotton, tobacco, wheat and other grains, fruit, and livestock. Nashville itself is a leading commercial and industrial centre. A well-built city, its prominent buildings include the capitol, the Federal building, the city hall, and the court house. In the grounds of the capitol is the tomb of James Polk, 7th U.S. president.



Paul Nash. *The Pond*, an oil painting (1921–24) expressive of the artist's great interest in the decorative quality of trees

By courtesy of the Earl of Cranbrook

Here also is a national cemetery and a confederate cemetery; a R.C. cathedral; an art museum; the state library and historical museum; Vanderbilt university, and Fisk university for negroes. Settled in 1780 and formerly known as Nashboro, the city was incorporated under its present name in 1784, and became a city in 1806. In 1864 it was the scene of a fierce battle between the Tennessee army and the Federal forces. A national parkway (447 m.), following the old Indian trail between Nashville and Natchez, Miss., was under construction in 1948. About 10 m. E. of Nashville is the Hermitage, the home of Andrew Jackson, a national shrine. Pop. (1950) 174,307.

**Nashville**, BATTLE OF. Federal victory in the American Civil War, Dec. 15-16, 1864. J. B. Hood, in command of the army of Tennessee 25,000 strong, was moving W. from Atlanta when he learned that a Federal army of some 55,000, under G. H. Thomas, was holding Nashville. Hood invested the town until, on Dec. 15, Thomas opened the battle by a general attack. The day slightly favoured the Confederates. An attack on the Confederate right in the morning failed, but MacArthur, commanding the 16th Federal corps, pierced the Confederate left at the moment when Federal cavalry attacked them in the rear. The rout was complete, and Hood made his way across the Tennessee river with what was left of his army. Federal losses were 3,000; the Confederates lost 4,500 in prisoners, in addition to heavy casualties.

**Nasik**. District and town of Bombay state, India, in the Bombay division. The dist. lies N.E. from Bombay, E. of the W. Ghats. The rainfall is 29 ins. annually; two-thirds of the area is cultivable, but only 54 p.c. is cultivated. Food grains and pulses are the chief crops.

The town is near the source of the Godavari river at the foot of the W. Ghats, and is consequently a sacred place of pilgrimage: temples and shrines line the river banks and dot the bed of the stream. Nasik, a great road centre on the rly. from Bombay to Delhi, is famous for its brass and copper work, and cotton handloom weaving. Area, 5,922 sq. m. Pop. (1951) dist., 1,429,916; town, 97,042.

**Nasirabad**. Town of Bombay state, India, in the dist. of Khandesh East. On the rly., 2 m. S. of Bhadli, it manufactures glass bangles. Pop. (est.) 15,000.

**Nasmyth**, ALEXANDER (1758-1840). Scottish painter. Born at Edinburgh, Sept. 9, 1758, he



Alexander Nasmyth,  
Scottish painter  
After Nicholson

studied under Allan Ramsay in London, and in Italy. Settling at Edinburgh, he tried portrait painting, but abandoned it for landscape. He was a member of the Society of Scottish Artists, an associate of the Royal Institution, and occasionally exhibited at the R.A., London. He died April 10, 1840.

**Nasmyth**, JAMES (1808-90). British engineer. Born at Edinburgh, Aug. 19, 1808, he was educated at the High School, and soon became an adept in making models of steam and other engines. In 1834 he opened a foundry in Manchester, and, in partnership with H. Gaskell, worked up a prosperous business. In 1842 he patented the steam hammer by which his name is best known. His claim to this was disputed, as the French manufacturer Schneider had copied the design from Nasmyth's note-book and built one at his Creusot works before Nasmyth erected his in England. He invented various tools and mechanical appliances, and constructed a telescope to assist his astronomical studies. His observations were recorded in *The Moon considered as a Planet, a World, and a Satellite*, 1874, illustrated with photographs. He died May 7, 1890.

**Nasmyth**, PATRICK OR PETER (1787-1831). A British painter. Born at Edinburgh, he settled in



Patrick Nasmyth,  
British painter

London in 1807. On account of his imitation of the Dutch school, he was acclaimed as the Scottish Hobbema. He exhibited at the R.A. from 1809, and was an original member of the Society of British Artists. He died in Lambeth, Aug. 17 1831.

**Nasr-ed-Din** (1829-96). Shah of Persia. He was born April 4, 1829, and succeeded to the throne, 1848.

He reached friendly relations with France and Russia; but his attempt to annex Herat (q.v.) brought him into conflict with Britain, 1856-57. A



Nasr-ed-Din,  
Shah of Persia

man of enlightenment and culture, his visits to Europe, 1873, 1878, and 1889, strengthened his endeavours to introduce reforms into Persia. Religious toleration, the telegraph, banking organization, and a post office were established, despite opposition. He was assassinated by a religious fanatic. May 1, 1896.

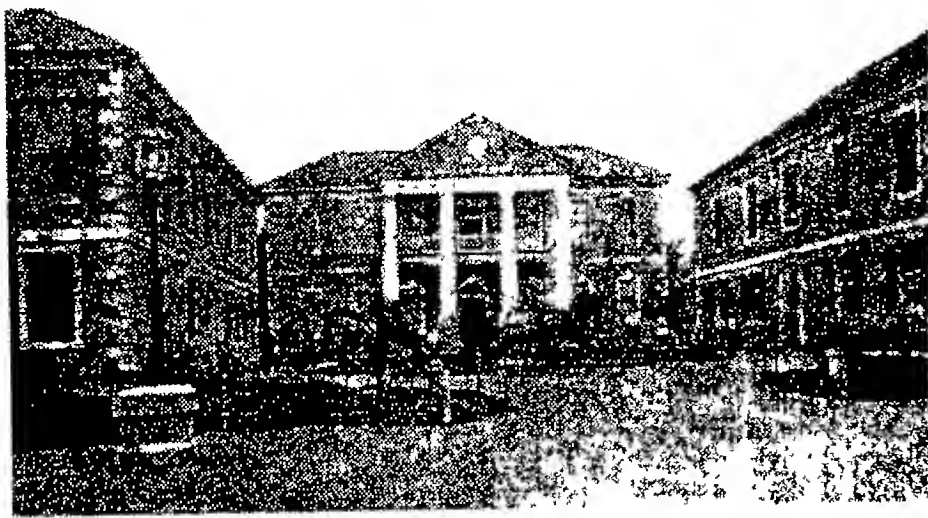
**Nassarawa**. Chief town of Benue prov., North Nigeria, in W. equatorial Africa. It is a centre of rubber and cotton production. The Fula tribe, who occupied the neighbourhood, surrendered to the British in 1902.

**Nassau**. An area of Germany once in the Prussian prov. of Hesse-Nassau. From it the family of Orange-Nassau took the title of count and duke. It was an independent state until 1866. Nassau lies between the Main and the Rhine, with the Lahn flowing through it. Its area is about 1,800 sq. m., and it had in 1866 nearly 500,000 inhabitants. It takes its name from the little town of Nassau on the Lahn, where the ruling family built their castle, but Wiesbaden was the capital.

The family of Nassau dates from about 1200. To a younger branch belonged William the Silent, and other princes of the house of Orange-Nassau. This became extinct when William III died in 1702, and its lands passed to a branch still in Nassau. This lost all its lands in 1806, but in 1815 its head, William, was made king of the Netherlands and grand duke of Luxemburg. His family, extinct in the male line in 1890, was represented in the female line by Wilhelmina, queen of the Netherlands.

The other branch of the family, having produced a German king in Adolph of Nassau (d. 1298), was divided into several lines. Two of these were made princes of the empire, and in 1806 Napoleon made them dukes. In 1816, having been granted the lands taken from the other branch of the family in 1806, Frederick William, as the





Nassau, New Providence. Courtyard of Government buildings in the capital of the Bahama Islands

result of a succession of deaths, became duke of Nassau. He joined the German Confederation, gave a constitution to his people, and in 1866 joined Austria in fighting Prussia, losing his duchy. In 1890 the head of this family became grand duke of Luxemburg.

**Nassau.** Capital of the Bahama Islands, B.W.I. It stands on the N.E. coast of New Providence, has a sheltered harbour, and is defended by forts. Prominent buildings include government house and a cathedral. It is a winter resort for invalids. It exports sponges, cotton, fruits, salt. Founded by the English in 1629, destroyed by the Spaniards and French in 1703, rebuilt in 1718, it was fortified in 1740. In the American Civil War it was the h.q. of the blockade runners.

**Nasser, GAMAL ABDEL** (b. 1918). First president of Egypt. Born at Beni Mor, Assiut prov. Jan.15.1918, he was educated at El-Masria secondary school and the military academy, Cairo, and served as an infantry officer in Egypt and the Sudan, and in the fighting with Israel 1948-49. He



Gamal Abdel Nasser President of Egypt

led the coup d'état of July 23, 1952, which forced King Farouk to abdicate, becoming deputy premier of the new govt. in 1953, premier 1954. He was elected president in a plebiscite 1956. His nationalisation without warning of the Suez Canal (g.v.) led to the abortive Franco-British invasion of the Canal zone, 1956. In 1958 he brought Egypt, Syria, and Yemen into a united Arab republic.

**Nasturtium.** Botanically, a genus of hardy cruciferous plants. Common garden nasturtiums are Indian cress (*Tropaeolum majus*), and canary creeper (*T. peregrinum*).

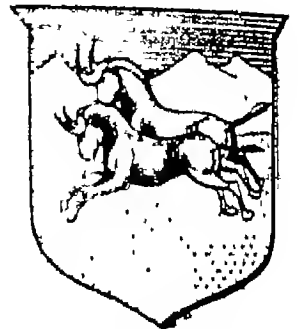
of British extraction, but there are a number of Dutch and some German settlers. Of the various religious denominations the Anglican church has the most adherents, but the Dutch Reformed church, Presbyterians, and Methodists are also strong. Most of the 200,000 Indians in S. Africa live in Natal, almost entirely in the towns. Zululand, annexed in 1897, includes Tongaland; the districts of Vryheid, Utrecht, and part of Wakkerstroom, which are included in the so-called northern districts,

**Natal.** One of the four provinces of the Union of South Africa. It has an area of 35,284 sq. m. (including Zululand, 10,427 sq. m.). The pop. in 1951 was 2,408,433, of whom 274,468 were whites. The great majority of the white pop. is

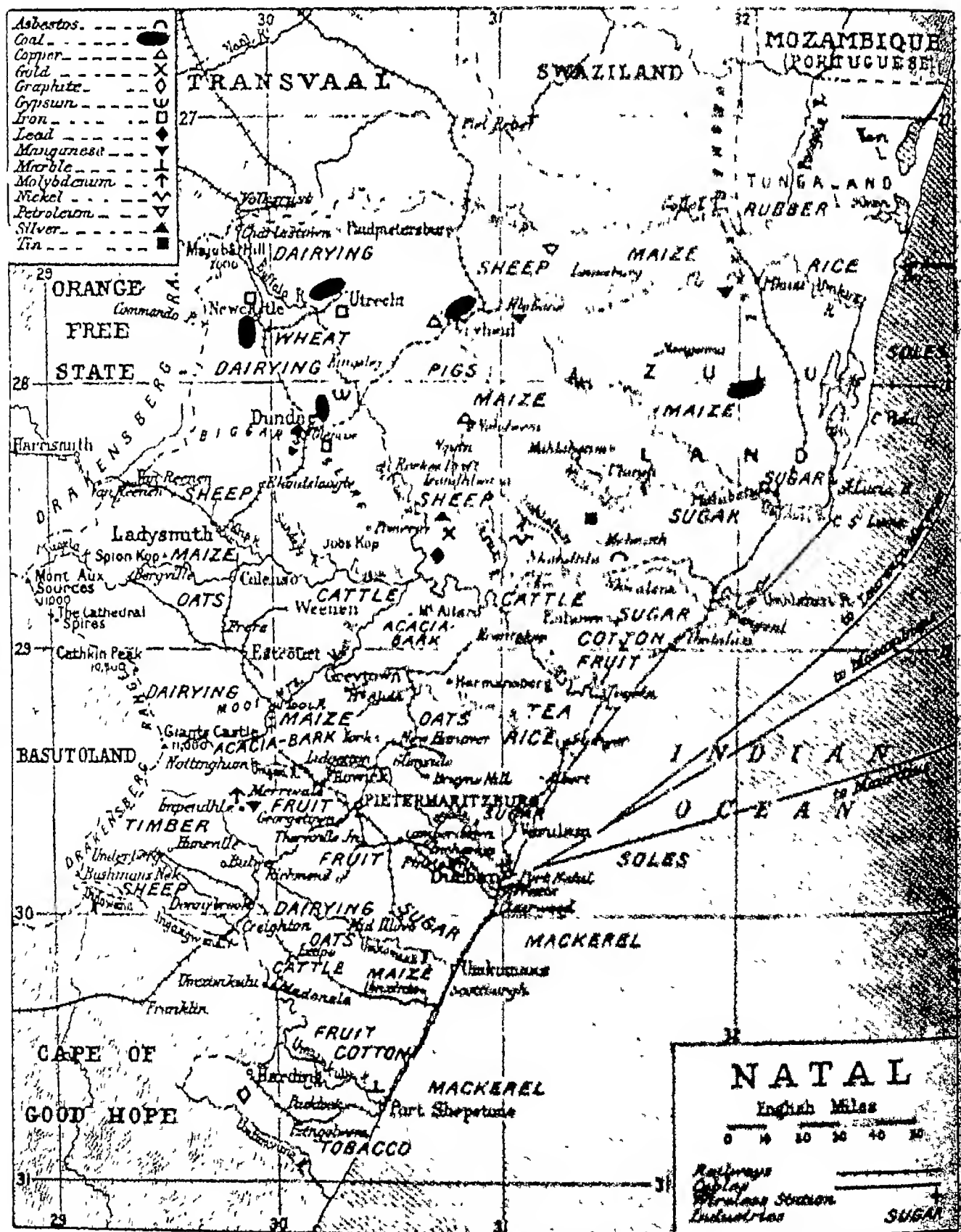
were transferred to Natal from the Transvaal in 1903. Pietermaritzburg is the seat of the provincial government, but Durban is the largest town, followed by Ladysmith, Dundee, Newcastle, Vryheid, and Greytown.

Natal lies in the extreme S.E. of Africa, and is bounded by the Cape Province and Basutoland on the S.W. and W.; by the Transvaal and Portuguese territory on the N.E. and N.; by the Orange Free State on the N.W., and by the Indian Ocean on the S.E. It has a seaboard of about 375 m., almost wholly without indentation. Of this, 165 m. belong to Natal proper, and the rest to Zululand. Its greatest length is about 250 m., and its greatest breadth about 200.

The province generally is mountainous, and near its border are some of the highest peaks of the Drakensberg range.



Natal arms



Natal. Map of the South African province covering an area of 35,284 sq. m. and showing the principal products and industries.

The ground rises rapidly from the coast in a succession of hills and ridges, between which are valleys in which the climate is tropical. The temperature falls as the higher parts of the country are reached, but everywhere it is warm. Malaria is found on the coast, but the province is practically free from consumption.

The highest mountains in Natal are Mont aux Sources (11,000 ft.), and other peaks of the Drakensberg range, many over 10,000 ft. high. The Biggarsberg is a spur of the Drakensberg. The chief river is the Tugela, which flows across the province from its source in the Drakensberg. Its main tributary is the Buffalo, which comes from another section of the Drakensberg, others being the Klip and the Mooi. Other rivers are the Umkomanzi, or gatherer of waters, a stream that, owing to its winding course, is 200 m. long, Umzimkulu with its tributary, the Ingangwana, and the Umgeni with its wonderful falls. The Pongola is a frontier river, which divides Natal from the Transvaal.

#### Natal and the Union

Natal is governed, as far as its internal affairs go, by a representative assembly and a small ministry responsible to it, on the accepted British model, except that its head, the administrator, is appointed by the Union government. This ministry looks after education, hospitals, etc., but most other matters are controlled by the Union authorities. It has a revenue from certain specified sources, and subsidies granted by the Union parliament. The franchise is practically confined to whites. In the house of assembly of the Union the province is represented by 17 members, while it sends eight to the Senate. The law is administered by magistrates in local courts and by judges on circuit. The highest court of the province sits at Pietermaritzburg, and from it there is a right of appeal to the supreme court of the Union at Bloemfontein.

The soil of the province is not very fertile and only about 12,000,000 acres are available for agricultural purposes. Coal is the most important mineral. Iron exists in large quantities, and in close proximity to the coal, while gold and other minerals are found. There are marble quarries near the mouth of the Umzimkulu. In Zululand gold reefs have been discovered, and there other minerals, including coal, exist. Timber is abundant, much being cut for

industrial purposes, and various kinds of tropical fruits abound in the warm regions near the coast, where also tea, sugar, coffee, and cotton are grown.

Many of the settlers devote their energies to the rearing of horses and cattle, although the rinderpest has proved a great drawback in this connexion. There are a large number of sheep and goats, many of these being owned by the natives, while ostriches, pigs, and poultry are bred. Of wild animals the larger ones, elephant, buffalo, and giraffe, have disappeared, and the lion and rhinoceros are found in only one area. Antelopes are still fairly plentiful, and there are some leopards and panthers. Birds and snakes abound.

The entrance to the province is at Durban, where steamers of the Union-Castle and other lines call regularly. From there the main line of rly. strikes across the country, passing by Pietermaritzburg, Ladysmith, and Newcastle, and after cutting the Drakensberg, enters the Transvaal. Two lines branch off from Durban along the coast, one to the N. and the other to the S., while two others go from Pietermaritzburg.

The country was discovered by Vasco da Gama on Christmas Day, 1497, and was therefore named Natal or Terra Natalis. Various mariners, both English and Dutch, put in here during the next three centuries, but the few attempts to make settlements were not successful. The native tribes were left almost to themselves until 1835, when one of the kings made a grant of land to the British and a colony was formed at Durban. The authorities in London, however, declined to proclaim the district a British colony.

#### Boers and British

In 1837 the first Boer settlers, coming through the Drakensberg, entered Natal. Almost at once they were attacked by the Zulus, and a struggle, in which some Britons took the side of the Boers, began. Finally, Dec. 16, 1838, after the British had been obliged to evacuate Durban, a large Zulu force was destroyed on the Umslatoos river, and the Boers secured possession of the country, entering Durban and founding Pietermaritzburg. They declared themselves a republic, but as they were technically British subjects, having come from Cape Colony, the British refused to admit independence. There was some fighting, but in 1843 Natal submitted and became a British colony.

In 1844 the country was added to the Cape of Good Hope, but in 1856 it was made a separate colony. In 1879 the Zulu war was fought out in the colony, and in the Boer war of 1900-2 some hard fighting took place on its borders. In 1893 it was granted responsible government, and in 1910 it joined the new Union of South Africa.

With the virtual closing of the Mediterranean and the loss of Singapore in the Second Great War, Durban became of first importance as a naval base, and formed a vital link in British and American communications with the Middle East. Natal units serving against the Axis forces included the Royal Natal Carabineers, the Natal Mounted Infantry, the Royal Durban Light Infantry, and units of the South African air force. See Abyssinia; N. Africa Campaign; S. Africa, Union of; Zululand.

*Bibliography.* Natalia: Exploration and Colonisation of Natal and Zululand, J. F. Ingram, 1897; Natal, the Land and its Story, R. Russell, 6th ed. 1900; A Lifetime in S. Africa, Sir J. Robinson, 1900; The Cradle Days of Natal, 1497-1845, G. Mackeurtan, 1930; Portrait of a Colony, A. F. Hattersley, 1940. Natal Province, Official Handbook, A. H. Tatlow, pub. annually, London and Durban.

**Natal.** Seaport and naval base of Brazil, formerly called Cidade dos Reis. The capital of the state of Rio Grande do Norte, it is served by weekly coastal steamers, and is also the main airport for trans-Atlantic traffic from Europe to S. America. Situated on the Potengi river near its mouth, 138 m. N. of Pernambuco, with which it is connected by rly., it has a harbour, formed by the estuary, which is occasionally obstructed by sandbanks dredged to admit vessels of 22 ft. draught. It is linked with the interior by a system of passable roads. The chief industries are cotton spinning and weaving and salt refining. Cotton, sugar, leather, carnauba wax, and salt are among its exports. Natal was founded in 1599 and became a city in 1822. Pop. (est.) 65,000.

**Natchez.** North American Indian tribe of Muskogian stock. In the 17th century they occupied nine villages in Mississippi. Their complex sun-worship, head-flattening, use of mounds as foundations of dwellings and temples, advanced pottery, and skilful weaving of mulberry-bark cloth perpetuated the culture of the mound-builders.

Warfare with the French early in the 18th century led to the displacement and partial destruction



of the tribe, the survivors amalgamating with other tribes. The few existing Natchez are found chiefly with the Cherokees.

Their name is perpetuated, not only in the city of Natchez (*v.l.*) in the state of Mississippi; but in Natchez Trace, a road constructed during 1801-02 from Nashville in Tennessee across the state of Mississippi to Natchez, about 500 m. away, and reconstructed as a national highway in 1948. See American Indians; Cherokee.

**Natchez.** City and seaport of Mississippi, U.S.A., the co. seat of Adams co. On the Mississippi river, 90 m. S.W. of Jackson, its commerce is riverborne; it is the only considerable U.S. town with no rly. service. A bridge linking it with Vidalia was opened 1940. There is a memorial park, and near the city a national cemetery. Industries include cotton-processing, and manufactures of clothing. Natchez occupies the site of a fort, built by the French, which passed to Great Britain in 1763. In 1779 the Spaniards secured it, and it was included in the U.S.A. in 1798. It was made a city in 1803. Pop. (1950) 22,740.

**Nathan.** Biblical character. A prophet, he advised King David regarding the building of the Temple at Jerusalem, reproved him for the Bathsheba episode, and helped to secure the succession of Solomon.

**Nathan, HARRY LOUIS NATHAN, 1ST BARON** (b. 1889). British politician. Educated at St. Paul's School, he was Liberal M.P. for N.E. Bethnal Green, 1925-34, joining the Labour party in the latter year. Defeated in 1935 at Cardiff S., he was returned for Central Wandsworth two years later, and remained its member until raised to the peerage in 1940. After serving for some months as parliamentary under-secretary for war and vice-president of the army council, he was minister of civil aviation 1946-48, being made a privy councillor. Having acted from 1939 to 1943 as chief welfare officer first to the Eastern command, then to the London district, he retained the honorary rank of colonel. He was actively concerned with the work of the Infants' Hospital, Westminster, and of Westminster Hospital.

**Nathan, GEORGE JEAN** (1882-1958). American dramatic critic. Born Feb. 14, 1882, at Fort Wayne, Ind., and educated at Cornell and Bologna Universities, he joined the staff of the New

York Herald in 1905. Dramatic critic on the Smart Set, 1908-23, in 1924 he was co-founder, and during 1924-25 co-editor, with Mencken of the American Mercury. He was dramatic critic on Vanity Fair, 1930-38; Life, 1934-37. Scribner's, 1937-39; and various other journals. Many of his vigorous dramatic criticisms were republished in book form; and from 1943 he published annually The Theatre Book of the Year. Dying in New York, April 8, 1958, he left money to found an annual prize for the best American piece of drama criticism.

**Nathanael** OR NATHANIEL (Heb., gift of God). Disciple of Jesus Christ. He came from Cana of Galilee (John 21, v. 2), and was brought to the Master by Philip (John 1, v. 45). Some scholars think he is identical with Bartholomew.

**Natick.** Town of Massachusetts, U.S.A. In Middlesex co., it is 18 m. S.W. of Boston on the Charles river. It has a rly. station. Manufactures include boots, shoes, and clothing. Pop. (1950) 19,838.

**Nation, CARRIE AMELIA** (1846-1911). American temperance reformer. Born Nov. 25, 1846, she married David Nation, a lawyer and minister, in 1877. Her life was devoted to militant temperance activities, and she carried out a campaign of smashing public house fittings with an axe, frequently coming into conflict with the authorities. In 1908 she came to Great Britain to organize a similar campaign, but, receiving little support, returned to America the following year. She died June 11, 1911. Consult Carrie Nation, H. Ashbury, 1930.

**National Anthem.** Musical composition with words, officially adopted for ceremonial use as an expression of loyalty to a national cause. National anthems are a comparatively modern notion, Great Britain's God Save the King (*q.v.*) being one of the earliest. This is said to have inspired Haydn to compose his Emperor's Hymn, which was the national anthem of Austria until 1918. This was in turn appropriated for the song Deutschland, Deutschland über Alles, written in 1848, which became the national anthem of Germany in 1919, superseding the imperial anthem, Heil dir im Siegerkranz (sung to the tune of God Save the King). Deutschland is one of several national anthems of which the words commemorate a particular event or period in the nation's history; others are the Marseillaise (*q.v.*), the Braban-

çonne (*q.v.*), and The Star-Spangled Banner, the anthems of France, Belgium, and the U.S.A. respectively, the last-named having been adopted as such in 1931. The national anthem of the U.S.S.R. was the Internationale until 1944, when a new one, composed by A. V. Alexandrov, was introduced.

During the first 21 months of the Second Great War, British listeners were able to hear a broadcast of the national anthems of an ever-increasing number of Allies played before the news every Sunday evening, until on the invasion of Russia the practice ceased on the plea of having become an absurdity. A complete list of national anthems, authors and composers, is given in Everyman's Dictionary of Music, ed. E. Blom, 1946.

**National Assembly.** Name taken by the body responsible for the opening stages of the French Revolution, and subsequently by other sovereign bodies in France, and elsewhere.

When the States-General met at Versailles in May, 1789, the three estates, nobles, clergy, and commons or third estate, *tiers état*, sat separately. The third estate invited the others to join in its deliberations, and on their refusal, decided in June to call themselves the National Assembly, claimed sovereign powers, and proceeded to act on this assumption. Having drawn up a new constitution, which Louis accepted, the national assembly was dissolved Sept. 30, 1791.

After the capitulation of Paris, a national assembly was chosen to treat with Germany for peace. It was elected under a law of 1849, and its 753 members met at Bordeaux, Feb. 13, 1871. Like its predecessor, it was a sovereign body, and was responsible for a constitution. Today the national assembly is the name given to the Chamber of Deputies and the Senate, when they sit together for the election of a president, the revision of the constitution, or some other special purpose.

In 1918, after the abdication of the kaiser, it was decided to call a German national assembly to decide the future of the country. The members were elected in Dec. and met at Weimar early in 1919. See Constituent Assembly; France; History; French Revolution.

**National Assistance Board.** See Public Assistance.

**National Convention.** Name given to the body summoned in Aug., 1792, to revise the constitution of France. Its predecessor, the legislative assembly dominated

by the commune of Paris, had suspended the king. The elections took place at once, 749 members being returned, and the convention declared the monarchy abolished and France a republic. In it fierce party conflicts took place, and its period of life covered the execution of the king and the Reign of Terror. Eventually it drew up the constitution known as the Directory, and on Oct. 26, 1795, it was dissolved. See French Revolution; Girondins; Jacobins; Mountain; Robespierre, etc.

**National Debt.** Total of the debts owing at any one time by a state or government. A state, like an individual, must limit its expenditure over a given period to its income for that period, or borrow to make up the difference. The ideal course is so to adjust taxation as to provide sufficient revenue each year for the anticipated expenditure of that year, with a slight margin for eventualities. But it is not always possible or desirable to do that, and borrowing is then resorted to.

Thus, in time of war state expenditure rises so steeply that it is impossible to meet it wholly from current taxation. The British national debt constitutes in its progressive expansion almost a record of the wars in which the U.K. has been engaged. In 1694 it stood at one million pounds; in 1763, after the Seven Years' war, at £146 millions; in 1784, when the American war was concluded, at £243 millions; after the close of the Napoleonic wars at £861 millions; in 1920 at £7,829 millions. It had fallen to £7,653 millions by 1929, but in 1946 it reached £25,000 millions.

Less spectacular additions may also be made by peace-time expenditure of a capital nature. Such additions in the U.K. have in the past been chiefly to finance state housing and other public works; the nationalisation of coal, electricity, transport, etc., after 1946, which involved the purchase by the state of various undertakings from their former private owners, was also financed by loans (or the issue of govt. stock). Elsewhere, national borrowing has been associated with the construction of rlys., roads, harbours, even towns.

Governments may borrow internally or externally. In internal borrowing the lenders are the general public and the institutions which comprise the state. External loans are subscribed by other governments or their nationals.

Thus, in the last century investors in the U.K. provided much of the capital needed by Dominion govts. as well as those of S. America and Russia. Before the Second Great War the interest annually paid on such loans constituted a valuable source of foreign income for Great Britain and helped to pay for her imports. To pay for wartime purchases a large part of this invested capital was sold and British income from abroad was correspondingly reduced.

During both Great Wars, and after the Second, the U.K. borrowed heavily from other members of the Commonwealth and from the U.S.A., but even so the internal part of the national debt far exceeded the external part.

Internal lending in the U.K. is represented by govt. securities, divided into: (i) the funded debt, including e.g. 3½ p.c. war loan, 2½ p.c. consols, 3½ p.c. conversion loan, which has been placed upon a more or less permanent basis; (ii) the unfunded debt, which comprises e.g. 3 p.c. and 2½ p.c. defence bonds and all issues of national savings certificates; (iii) the floating debt, which is for the most part temporary and includes treasury bills and treasury deposit receipts, both repayable within three months, together with advances made to the Treasury by the Bank of England and other government depts. The government repays these floating debt investments by making a fresh issue, sometimes for a sum larger than that being repaid, as an old issue is repaid. The same principle is applied to the longer dated loans constituting (ii). Repayment of these is frequently offered at the option of the government between certain given dates: e.g. the issue of 3 p.c. savings bonds made in 1941-42 was described as 3 p.c. savings bonds 1955-65. At any time after Aug. 15, 1955, the government may, but not later than Aug. 15, 1965, it must, repay the loan. If, say, in 1955 it can, owing to the monetary conditions then prevailing, borrow for a relatively long term at less than 3 p.c., it will probably issue a new loan to repay 3 p.c. savings bonds 1955-65. If prevailing interest rates in 1955 are higher than 3 p.c., it will allow the savings bonds to continue until 1965, and then issue another loan, at the best interest terms it can, to repay them. The first procedure is called conversion, and reduces the interest cost of the national debt; an example was the conversion of

£1,911 millions of the war loan issued during 1914-1918 at 5 p.c. to a 3½ p.c. loan in 1932, the holders at the time being offered the lower interest rate in future or their money back.

Longer term British government securities can always be sold on the London stock exchange, though, of course, the price at which they sell may be less than that at which they were bought. National savings certificates and defence bonds are repayable by the government at, or over, their original cost on demand or within a very short period.

Although the national debt constitutes a burden upon every individual forming the state—the interest payable on that of the U.K. represents more than £11 per annum per head of the whole pop.—to increase it, even seriously, is not in given circumstances altogether harmful. During the Second Great War the British national debt increased by some £17,000 millions, or about half the cost to the govt. of that war. Had taxation been imposed to meet the whole cost, the burden would have been intolerable. On the other hand, most of this state expenditure was paid out as wages, profits, rentals, etc., and continued borrowing from the general public had a beneficial effect upon the nation's economy since it reduced the amount of money in circulation and thus helped to prevent rise of prices. It also placed in reserve a vast sum upon which the public could draw to produce private demand for goods and services. Nevertheless, it is not good to allow the national debt constantly to increase, and during periods of relative prosperity budget surpluses are normally used to repay part of the debt.

**National Defence Contribution.** British tax on excess profits of industry imposed by the Finance Act of 1937 to pay for rearmament. As originally proposed, the tax was calculated on a complicated basis, and called forth such criticism that Neville Chamberlain substituted a straightforward additional tax on profits above £2,000 a year—5 p.c. for companies and 4 p.c. for firms and individuals, professional men being exempt. Imposed for a period of five years, the tax was expected to yield £25,000,000 a year, and this figure was in fact exceeded. The Excess Profits Tax (*q.v.*) of 1940 was an alternative to the N.D.C., the higher figure being payable.



**National Fire Service.** Name given to the fire brigades of the U.K. on their reorganization in 1941, when control was transferred from local authorities to a central administration. It was dissolved by an Act of 1947. *See* Fire Service.

**National Gallery.** Term usually applied to a collection of pictures and statuary belonging to a nation, and maintained and added to by public funds. One of the first of such galleries was founded by Napoleon I when he converted the Louvre (*q.v.*) into a national museum, depositing in it a collection of works of art captured from the treasure-houses of Europe.

The National Gallery in London was begun by the purchase by the British government of the Angerstein collection of pictures in 1824. Later purchases, bequests, and gifts have made it one of the most representative collections in Europe. The existing gallery on the N. side of Trafalgar Square, once derisively styled "the national cruet-stand" from the arrangement of its somewhat ineffective cupolas, was completed and opened in 1838; it has been several times enlarged. It is controlled by trustees, and a director appointed by the first lord of the Treasury. Special exhibitions, usually of works belonging to the gallery, are arranged from time to time.

During the Second Great War, when the most valuable pictures were removed for safety to places outside London (*e.g.* the university of Wales at Bangor, and a store built in the Manod slate quarry, Blaenau Festiniog), a single noted masterpiece was exhibited to the public, and changed periodically. One of the empty galleries was devoted, from Oct. 10, 1939, until April 10, 1946, to daily midday concerts organized by (Dame) Myra Hess; 1,698 concerts were given, attended by about 800,000 people. Damage by German bombing from the air kept many of the galleries closed for some years after the war was over.

In Edinburgh is the National Gallery of Scotland, a building in Ionic style, 1850-58, with paintings of the Italian, Dutch, and French schools and an unrivalled collection of Raeburns.

In the U.S.A. the National Gallery of Art, in Washington, D.C., was established by Act of congress in 1937 and inaugurated in 1941 as a gift to the nation by Andrew Mellon. The gallery is one of the world's largest marble structures. Mellon also gave his art collection, to which there have been many later additions. *See* Hermitage; National Portrait Gallery; Tate Gallery.

**National Health Service.** Public service of the U.K., set up under the National Health Service Act of 1946. Administered by the ministry of health, it brought into a single service the partial and incompletely coordinated services formerly provided by the general practitioner scheme of the old National Health Insurance Acts, the local authority clinic and domiciliary services, and the municipal and voluntary hospitals. The National Health Service (Scotland) Act, 1947, provided a similar

hospital service provides specialist services, for both in-patients and out-patients, together with domiciliary consultations where medically necessary. (Private and semi-private accommodation must be paid for.) All necessary drugs and appliances are also supplied. Blood transfusion and mass radiography services are provided.

2. *Local Health Authority Services.* The Act centres all the clinic and domiciliary services on counties and county boroughs, which are designated local health authorities. The L.H.A. looks after expectant and nursing mothers and children under five, provides midwife, health visitor, home nurse, and domestic helper, an ambulance service and health centres; arranges for vaccination, immunisation, and the prevention, care, and after-care of disease.

3. *General Medical Service.* The Act set up executive councils to administer the general medical, the general dental, the pharmaceutical, and the supplementary ophthalmic services. A list of doctors in any given neighbourhood willing to accept patients can be consulted at the local post office, or at the office of the executive council, whose address can be obtained at a p.o. Each doctor has a list of patients who have chosen him and to whom he has agreed to give all ordinary general practitioner services. For each he receives a capitation fee; he makes no charge to the patient. Dental treatment is also given. Necessary drugs are obtained through a pharmaceutical chemist or from the doctor. General practitioners may order some appliances. The supplementary eye service entitles patients to an eye-test and to the supply of spectacles; spectacles can also be obtained through the hospital service. A general practitioner obstetrician or the patient's usual doctor gives maternity care.

**MEMBERSHIP OF COMMITTEES.** Members of the various boards, committees, and councils are all appointed by, or after consultation with, appropriate bodies. They are selected from men and women having the necessary qualifications and experience who give their services, receiving only their expenses. A central health services council and a number of standing advisory and special sub-committees advise the minister.

**FINANCE.** The health service is not an insurance scheme, and although something under 1s. of the weekly contributions made under the National Insurance Act



National Gallery, facing Trafalgar Square, London

service for Scotland, administered with slight differences in local organization by the Scottish office; an Act, 1947, of the N. Ireland parliament applied the service to N. Ireland. Under these three Acts, which came into force July 5, 1948, all services and appliances provided were free. The Finance Act of 1951 authorised a charge for dentures and spectacles, extended in 1952 to hearing aids, wigs, and certain appliances, to prescriptions (1s. each), and to dental treatment (£1 or less).

The Act of 1946 provided:

1. *Hospital and Specialist Service.* This welded into a single service the old voluntary and municipal hospitals, the majority of which were vested in the minister. The non-teaching hospitals were placed under 14 regional hospital boards which delegate day-to-day management to hospital management committees. Each of the 36 teaching hospitals was given its own board of governors. The

of 1946 goes to the upkeep of the service, this is only a small part of the total cost, and the service is available to everyone, whether insured or not including, when required, visitors from abroad as well as residents. The service is in the main a charge on the exchequer; L.H.A. services are financed partly from the rates.

#### **National Health Insurance.**

This British state institution, superseded by the National Health Service (*q.v.*), is described under Insurance, National.

#### **National Hunt Committee.**

Self-elected body responsible for the conduct of horse racing under National Hunt rules, *i.e.* cross-country racing, steeplechasing (*q.v.*), and hurdling. It is similar to the Jockey Club (*q.v.*).

**Nationalisation.** Transfer of the ownership and control of property from individuals or groups to the nation as a whole. Property to which nationalisation may be applied includes: (1) land and all rights attaching to it, together with machines and other equipment, *e.g.* rlys.; (2) certain rights only in the land, *e.g.* mineral rights, development rights; (3) commercial and industrial undertakings, with all their assets and liabilities, contractual rights and duties, transferred as "going concerns," *e.g.* gas undertakings; (4) monopoly rights assumed by the state, *e.g.* issue of currency and coinage, manufacture of tobacco, organization of foreign trade.

Nationalisation of property or of an economic activity may be introduced with any of the following objects: (1) to advance the safety of the state or to increase the security of the existing govt.; (2) to strengthen the control by the govt. of economic resources; (3) to secure monopoly gains and unearned increment for the public revenue; (4) to increase technical efficiency by unifying control, eliminating competition, or replacing the motive of profit-making by the motive of public service; (5) to organize large-scale research; (6) to utilise fully resources incompletely developed by private enterprise; (7) to provide commodities and services not already furnished by private suppliers; (8) to prevent the private ownership and control of great aggregations of capital and economic power; (9) to bring about a more even distribution of the national income.

Nationalisation may be effected by (1) confiscation, *i.e.* the taking of the property from the existing

owners without compensation, a method adopted in *e.g.* Russia in regard to land, and a common incident of conquest and colonisation; (2) purchase from the current owners, the price being determined by arbitration, the market quotation for shares, govt. decree, or parl. statute, and paid in cash or by the issue of govt. bonds of limited marketability: such a purchase may involve an element of confiscation, if the owner is made poorer through the compulsory transfer of his property; (3) direct govt. investment, state funds being used directly to finance the construction of a new undertaking, such as a rly. or irrigation works.

#### **Methods of Operation**

Nationalised properties may be administered (1) directly, through a govt. dept.: an outstanding example of this type is the British Post Office, answerable to parliament through the Postmaster-General; (2) through special corporations created by the legislature, and invested with a national monopoly and a varying degree of autonomy, *e.g.* the British Broadcasting Corporation, the National Coal Board, the Port of London Authority; (3) through regional boards, closely linked with county councils and other local govt. authorities, *e.g.* the national hospital service.

In many countries some or all of the railways are nationalised, sometimes to encourage economic development and wider settlement, sometimes for defence, sometimes to increase the efficiency of transport. Many countries have nationalised posts, telephones, and telegraphs. A partial nationalisation of hydro-electric generation is common in mountainous countries. In the U.S.S.R. and territories politically allied, nationalised industry is the rule, although some private agriculture and much private internal trade and some types of private manufacture are permitted. Most countries have a state central bank in a similar position to that of the Bank of England since 1946.

#### **Arguments for Nationalisation**

Those who advocate nationalisation argue: (a) it is undesirable that personal profit should be the chief motive of economic activity, with the increase of public welfare or public usefulness merely a by-product; and, moreover, it is often possible to increase private profit more by withholding goods or services than by providing them; (b) competition is wasteful

of resources, so wasteful that there is an inherent tendency for private undertakings to combine to lessen competition; this combination may result in unjustifiable increases in the price of goods, and concentrates too much economic power in the hands of a few individuals, who control large aggregations of capital and hence wield great political power without being responsible to parliament; (c) over an increasing part of the economic field monopoly is natural, that is, technically much more efficient than competition, and monopoly gains should be secured for the public; (d) in the state of today extensive planning of the use of economic resources is necessary and such planning is much facilitated by unified control; (e) nationalisation makes possible the fullest exploitation of resources, the utmost development of technique through large-scale research, the employment of the best technical and managerial ability, the greatest economy through bulk purchase, etc.

#### **Arguments against Nationalisation**

Those who oppose nationalisation argue: (a) there is no adequate substitute for private profit as an incentive, and when that incentive is removed managers lack the urge to be efficient: when competition is absent they tend to become complacent, lacking in initiative, and unwilling to experiment or to take risks; (b) nationalised undertakings become too rigid and over-centralised: men on the spot are unable or unwilling to take decisions, and there are in consequence unreasonable delays in making necessary or desirable changes of policy; (c) any tendency on the part of monopolies to exploit the public can be met by control of monopolies without unnecessary interference in their management; (d) nationalisation places numerous important and lucrative positions within the gift of the govt., and thus tends to political corruption; (e) extensive govt. investment in the existing equipment of an industry may make it more difficult than under private enterprise to secure the introduction of new machines embodying fresh discoveries and inventions.

Problems incidental to the running of new state enterprises are: (1) Method of organization and management: what structure of authority will best retain for nationalised undertakings flexibility, adaptability, and responsiveness to changes in demand.



supply, and technique, and ensure that employees at all levels work effectively? (2) How can the interests of consumers be safeguarded when they are no longer able to express their dissatisfaction by giving their orders to other suppliers? (3) What are to be the tests of the efficiency of a nationalised undertaking, particularly if, as may often be the case, the undertaking is not expected to work at a cash profit? Standards of efficiency can probably be fixed by publishing details of working costs in relation to output, and comparing these with those of similar undertakings elsewhere. (4) What is the best method of exercising parliamentary control over the bodies which are entrusted with the conduct of nationalised industries? Trial and error, aided by the developing science of management, which uses as two of its principal tools statistical method and psychological investigation, must provide the solutions of these problems.

**Nationalist.** Name given to any political party that works for the independence of a country that is part of, or under the domination of, a larger unit. There has been a tendency also to apply the label to a party that opposes what it may consider to be disruptive forces within a state. Thus Gen. Franco's party in Spain adopted the title Nationalist.

The Irish Nationalist party appeared in an organized form about 1870 under the leadership of Isaac Butt, and was strong in the British house of commons after the general election of 1874, becoming still more so under the direction of C. S. Parnell. Its main object was to secure home rule for Ireland. With about 80 members it exercised considerable influence in British politics, especially when, as in 1892-95, the two main parties therein were fairly evenly balanced. Split after Parnell's appearance in the divorce court in 1890, the party was reunited under J. E. Redmond, but it disappeared at the election of 1918, its place being taken by Sinn Féin (*q.v.*).

**Nationality.** Generally, the sum of the characteristic differences between groups of persons which arise from divergences of cultural tradition and language. Such a group is called a nation, and should be distinguished from a group living under the same government, which is usually called a state. The boundaries between nationalities, even when geographically separate, do not always correspond with the

frontiers of states. Sometimes one state includes groups of several national origins.

There is no clear demarcation between the characteristics of a small local group and the more important and permanent characteristics of a nationality, as there is no clear difference between a dialect and a language; but in general a nationality involves a traditional outlook on life, traditional quasi-religious ideals, and a fully developed mode of expression in a language with a literature. Nearly always nationality is connected with some country or district, even when, as in the case of the Jews, the connexion is one of memory.

From the sense of nationality arises the political enthusiasm called nationalism. This originates either from oppression or from an exaggerated sense of the importance of the group. Thus the nationality of the Italians in 1860 was felt to be oppressed by the Austrian government in Italy; but after the victory had been won against Austria, the formerly oppressed group developed an exaggerated sense of its own importance.

Nationality may be, or may be made to serve as, the basis of a distinct form of government; but it may in certain cases be well developed within the same state together with other nationalities. Of the formative elements in nationality the most important is tradition; by which is meant an inherited admiration for certain types of character and certain kinds of life. In almost all nationalities there are quasi-mythical national heroes who are believed to have been the embodiment of the national ideal; and in every nationality its history is believed to be a record of success and progress of its own excellence. These beliefs are not necessarily pernicious; but the discovery of the actual scientific facts as to descent, language, and moral or religious tradition has tended to discourage narrow nationalism and promote a sense of international good will. See British Subject; Naturalisation.

**National Liberal.** Political party label adopted at various times in various countries. The most notable and influential example is the National Liberal party in Germany between 1866 and 1918. It was "national" because it originally advocated union between N. and S. Germany, as achieved in 1871. From that year until 1878 the party helped Bismarck to carry out many reforms

and supported him in his opposition to the R.C. church. But it broke with him over his experiments in state socialism and protection, and its influence declined.

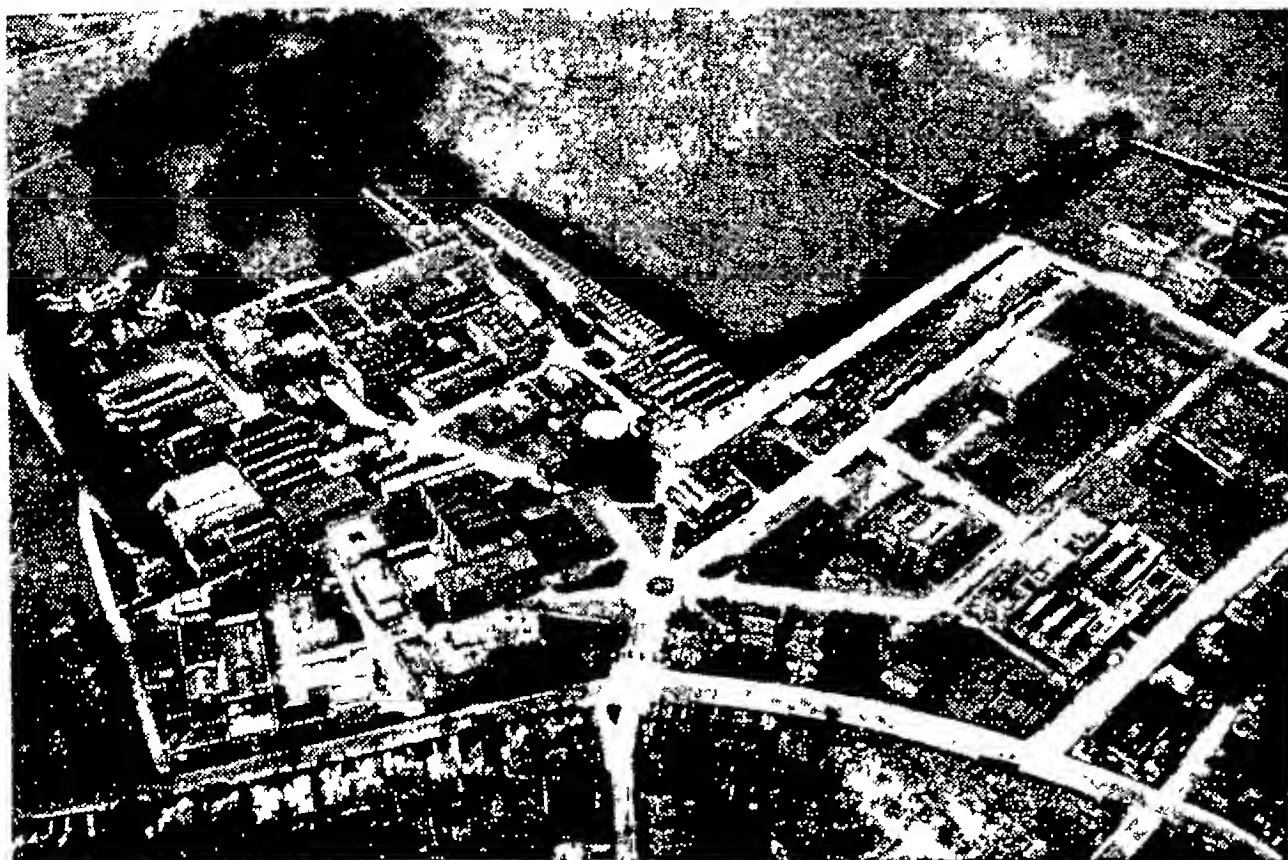
In the U.K., on the break-up of the Lloyd George coalition govt. in 1922, the former Liberals of the coalition, under Lloyd George, called themselves National Liberals, as a distinction from the independent Liberals under Asquith; but the two branches were reunited in time for the 1923 election as "Liberals without prefix or suffix." In 1931 those Liberals who followed Sir J. Simon in full participating support of Ramsay MacDonald's National government called themselves National Liberals (or, popularly, Simonites), whereas those who followed Sir H. Samuel in holding reservations on the question of free trade or protection adopted the name of Liberal Nationals (Samuelites), until, seceding from the government, they became once again Liberals. The term was still in use during the elections of 1945, 1950, and 1951 for Liberals prepared to support the Conservative leader.

**National Liberal Club.** London political club. It was formed, Nov. 16, 1882, with Gladstone as president, to further the interests of Liberalism, and to provide a central club in London for Liberals throughout the kingdom. Among its objects was "to found, in connexion with the club, a political and historical library, to be called the Gladstone Library, as a permanent memorial of the services which the Right Hon. W. E. Gladstone has rendered to his country." The inaugural banquet was held on May 2, 1883.

The club-house, in Whitehall Place, overlooking the Thames Embankment, was opened in 1887. The Gladstone Library was opened in 1888. The membership is about 3,650.

**National Library of Scotland.** Founded in 1682, this library belonged to the Faculty of Advocates until 1925. It has the privilege of receiving a copy of every book entered at Stationers' Hall. It is housed in the Parliament House, Edinburgh, and contains over 500,000 volumes, as well as many valuable MSS. dealing with Scottish history. It is open to all engaged on literary work.

**National Park.** Area of relatively wild country publicly owned and nationally administered so that its characteristic beauty is preserved and facilities for its public enjoyment are provided.



National Physical Laboratory. Air view of the extensive buildings of the research laboratory at Teddington, Middlesex  
*Crown copyright*

Wild life and existing buildings of interest are protected, and new building is controlled.

In July, 1945, a National Parks Committee appointed by the minister of Town and Country Planning recommended the establishment of 12 national parks in England and Wales: the Lake District, Peak District, Dartmoor, Yorkshire Dales, Exmoor, South Downs, Roman Wall, north Yorkshire moors, Brecon Beacons and Black Mountains, Norfolk Broads, and certain stretches of N. Wales and the Pembrokeshire coast. The National Parks and Access to the Countryside Act, 1949, set up a commission to schedule and preserve national parks and areas of outstanding natural beauty, and gave powers to establish nature reserves.

S. Africa possesses some notable national parks, *e.g.* the Natal National Park, embracing 20,000 acres of the northern part of the Drakensberg mts. Kruger National Park, between the Sabi and Limpopo rivers, was established as a game sanctuary in 1898 and has an area of 8,000 sq. m. In Cape Province there are the Kalahari Gemsbok, Bredasdorp Bontebok, Addo Elephant, and Mountain Zebra national parks, many being also game preserves. The principal national park in Australia is at Port Hacking, N.S.W., 15 m. S.W. of Sydney, and covers an area of 58 sq. m. with a frontage on the Pacific of 7 m. The Albert National Park in the N.E. Congo is maintained by the Belgian govt. as a game and nature preserve.

The U.S.A. has some fine national parks. They are administered by the department of the Interior. The best known are the

Glacier (997,487 acres), a rugged mountain region with 200 glacier-fed lakes; the Grand Canyon (645,136 acres), the largest example of erosion in the world; the Mammoth Cave of Kentucky (50,548 acres); Mount McKinley, Alaska, (1,939,000 acres), which includes the highest mountain in N. America; Mount Rainier (241,526 acres), the greatest single-peak glacial system in the U.S.A.; Yellowstone Park (2,213,207 acres), which has more geysers than the rest of the world; and Yosemite (756,295 acres), which has unique lofty cliffs and three groves of giant sequoias.

There are some 30 national parks in Canada with a combined area of 29,704 sq. m., the largest being Jasper (*q.v.*), 4,200 sq. m.

**National Physical Laboratory.** A research laboratory founded in 1900 at Teddington, Middlesex, in Bushy House, an old royal residence granted for the purpose. The laboratory, covering 50 acres, consists of 16 large and a number of smaller buildings. It was controlled by the Royal Society until 1918, when it was absorbed by the department of scientific and industrial research (constituted 1915), though the president of the Royal Society is *ex officio* chairman of the general board, while the executive committee includes among its members representatives of the Royal Society.

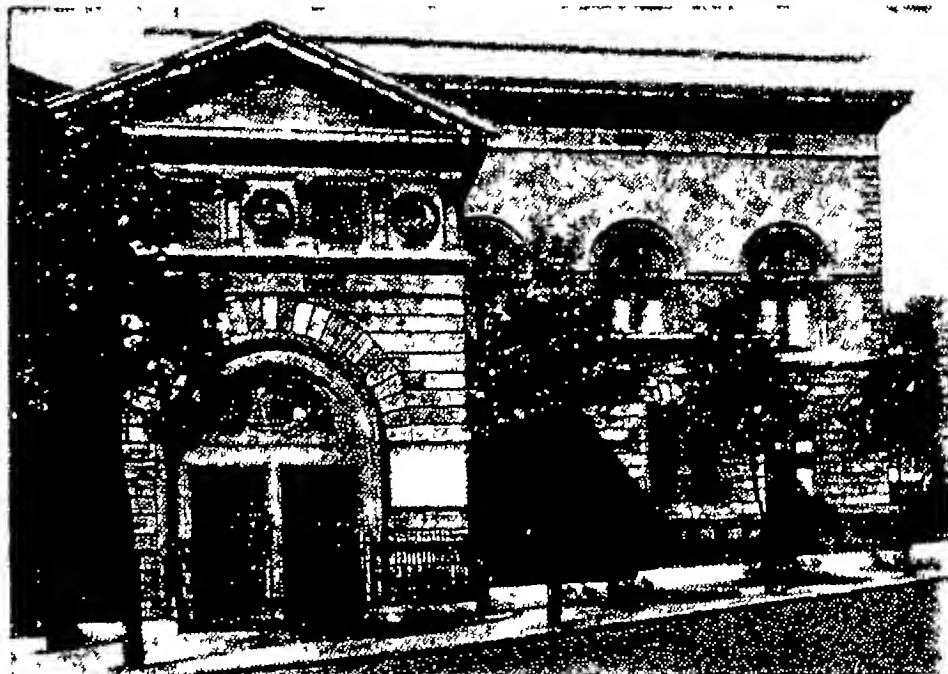
The main functions of the laboratory are to carry out research; to establish and maintain precise standards of measurement and physical constants; and to make tests of instruments and materials. It also undertakes investigation of special problems. Payment is received for work done for outside bodies, and the laboratory receives a govt. grant. Research undertaken includes all branches of physics.

There are a number of departments, each under a superintendent, and each specialising in one branch of physics. Increasingly important is the aerodynamics department, which operates under the control of an aeronautical research committee appointed by the Air ministry. The Wilham Froude Laboratory carries out tests of ship hulls and propellers.

Results of researches are published in an annual report, and a collection of abstracts of all the papers contributed by the laboratory to the scientific and technical press is issued each year. Its directors have included Sir Richard Glazebrook, Sir J. E. Petavel, and Sir Charles G. Darwin.

**National Portrait Gallery.** Building in St. Martin's Place, London, W.C.2. It contains about 3,500 paintings, sculptures, and drawings of men and women who have figured with distinction in the history of the United Kingdom. No portrait of any living person, except of the reigning sovereign and of his or her consort, is admitted, and no modern copy of an original portrait. The gallery was founded by Act of parliament, June 6, 1856. Opened at 29, Great George Street, Westminster, 1859, the collection was housed at S. Kensington, 1869-85; at Bethnal Green Museum, 1885-95.

The existing structure, built 1890-95 in Italian style from designs by Ewan Christian, was



National Portrait Gallery, St. Martin's Place, London



opened April 4, 1896, at a cost of £96,000, of which William Henry Alexander, of Shipton, Andover, Hants, contributed £80,000 and the government £16,000 and the site. An extension, the cost of which was defrayed by Lord Duveen, was opened in 1933. The Scottish National Portrait Gallery, Queen Street, Edinburgh, built in 14th-century Gothic style from designs by Rowand Anderson, was opened in 1889. The building, which cost over £60,000, was the gift to the nation of John R. Findlay (1824-98), proprietor of *The Scotsman*.

**National Provincial Bank, Ltd.** English banking company. Established 1833 as the National Provincial Bank of England, the first bank formed in London with the express object of developing a number of provincial offices controlled from London, it was registered as a limited company in 1880. In 1918 it amalgamated with the Union Bank of London and with other banks, adopting the name National Provincial and Union Bank of England, Ltd.; the shorter form was adopted in 1924. In 1920 the whole capital of Coutts & Co. (*q.v.*) was acquired; Coutts remains affiliated to the National Provincial Bank while retaining its separate identity and carrying on its specialised business. In 1958 the National Provincial Bank had 1,493 branches and offices; head office, 15, Bishopsgate, London, E.C.2; issued capital was £10,513,162.

**National Register.** Census taken in the U.K. during each of the two Great Wars to ensure that the best use should be made of man-power, and to make rationing possible. The register compiled Aug. 15, 1915, covered all inhabitants of the U.K. between the ages of 15 and 65, and was used by the government in 1916 when compulsory service was introduced.

On Sept. 7, 1939, a National Registration Act, providing for a complete register of the whole country, received the royal assent. National registration forms were distributed during the week before Sept. 29, which was fixed as National Registration Day, and identity cards was issued.

In both wars the country was divided into a number of areas—65,000 in 1939—each of which embraced 200-300 households. Details required for each person were name, sex, date of birth, whether or not married, occupation, membership of reserve or auxiliary forces or civil defence.

Each registered person was allotted a number. The register was maintained until 1952. The number allotted to a person on the national register continued to be used for that person in connexion with the national health service. *See also* Identity Card.

#### **National Savings Movement.**

Non-political movement in the U.K. for the encouragement of small savings. Organized saving by persons of small means had its foundation laid by the trustee savings banks set up early in the 19th century by public-spirited persons; and an act of 1861 established the post office savings bank. During the 19th century friendly societies and other corporate bodies also played their part in the encouragement of thrift; but a nationally organized effort to promote saving started only during the First Great War, in 1916. In that year, on the recommendation of a committee appointed by the chancellor of the Exchequer to consider how to check personal expenditure as a means of offsetting inflation and fostering economy throughout all ranks of society, a national savings committee was set up to organize an appeal to the whole country, with Robert M. Kindersley (later the 1st Lord Kindersley) as president. Under his leadership the movement spread rapidly, local savings committees being established and savings groups set up to encourage the purchase, by instalments, of the new "war savings certificates," a novel and ingenious financial instrument which concentrated attention on the growth of capital instead of on the periodical distribution of interest. Certificates of the first issue, Feb. 21, 1916, to March 31, 1922, had a unit cost of 15s. 6d., and at the end of 10 years were worth 26s. Subsequent issues varied in initial cost and in realization value, but the method of issue and increment were similar.

#### **After the First Great War**

The movement was maintained after the war, there being 41,000 savings groups in operation in 1919. In 1920 the word national was substituted for war in the title of the certificates. In 1930 the scope of the movement was extended to promote savings in the post office savings bank and trustee savings banks as well as through the medium of national savings certificates.

The depression of the 1930s, with the resulting widespread un-

employment, was a setback to the movement, though in the more thoughtful emphasised its value. But it survived, thanks mainly to the work done in schools to train children in wise money management through savings groups; and at the outbreak of the Second Great War in 1939 the movement covered some 47,000 groups; £1,500 million was standing to the credit of the small saver.

In Nov., 1939, a new security, the defence bond, was introduced, and an intensive savings campaign during 1939-45 brought the number of savings groups to 200,000, and the total of "small savings" to approximately £5,100 million.

#### **Premium Savings Bonds**

The immediate post-war years saw a falling off but the movement adapted itself to the new situation. Another new form of security, the premium savings bond (*q.v.*), was introduced in 1956. At the beginning of 1958 more than 7,000,000 people in England and Wales were saving regularly through some 186,000 savings groups; payments into savings bank accounts and the purchase of savings securities averaged £28½ million per week; total standing invested in national savings was well over £6,000 million.

The governing body of the national savings movement is the National Savings Committee, with h.q. at 1, Princes Gate, London, S.W.7. This committee decides the main policy, and controls voluntary local savings committees and savings groups. The members of the committee, all of whom act in a voluntary capacity, are appointed by the lords commissioners of H.M. Treasury. Twenty-one represent government departments, national organizations, and interests whose advice is of value to the movement; 12 are elected by local voluntary workers to represent the 12 regions into which the country is divided administratively; and eight are elected to represent the large cities. All executive authority is vested in the national savings committee which has the power to make any necessary alterations in the form and management of the organization. Its constitution provides for the democratic representation of voluntary workers through an electoral chain of local savings committees and regional advisory committees. Autonomous committees similar to the national savings committee, with

h.q. respectively in Edinburgh and Belfast, supervise national savings activities in Scotland and Northern Ireland. Once a year a national savings assembly meets to advise the national savings committee on policy and methods: it is composed of some 250 savings workers elected from all areas of England and Wales.

The principal task of the local savings committees, of which there are over 1,300 in England and Wales, is to put policy into practice by forming and maintaining savings groups, and by making the movement known as widely as possible, by means of posters, leaflets, films, and other forms of publicity. These committees consist of group workers and others interested in the objects of the movement. The basic unit of the movement is the savings group. Composed of varying numbers of savers, groups are organized and run by honorary officers who by means of weekly collections, or in some places of employment by deductions from pay, enable their members to invest regularly in national savings securities. Such groups are run in factories, offices, schools, streets, and villages, social organizations, and units of H.M. forces. Voluntary workers in the movement are assisted by a small official staff with h.q. in London and regional offices in the provinces.

**National Service.** Service on behalf of the country, either in the armed forces or in essential work. In the U.K. a ministry of National Service was created during the First Great War in Aug., 1917; in Nov., 1917, it took over from the army the direction of recruiting. It was merged in the ministry of Reconstruction in Nov., 1918. During the Second Great War national service was made the responsibility of the minister of Labour, whose department was renamed the ministry of Labour and National Service in Dec., 1939. The minister had the task of allotting man-power between the armed forces and vital war industries, and after the war retained responsibility for the call-up for compulsory service in the forces. Single women were subject to compulsory national service 1942-45. Under the National Service Acts, 1947, male British subjects ordinarily resident in the U.K. who were 18 or over and under 26 were, after Jan. 1, 1949, liable to serve in the armed forces for 18 months' whole-time service and afterwards for 4 years' part-time service in an

appropriate auxiliary unit. By an amending act of Sept., 1950, the period of full-time service was extended to two years, followed by 3½ years in an auxiliary service. Provision was made for reinstatement in civil employment, and for conscientious objectors.

The obligation of national servicemen to train with an auxiliary force was suspended in 1956, and the Territorial Army reverted to a voluntary basis. In 1957, the U.K. govt. announced its intention of reducing military manpower by reorganizing the regular army on a voluntary basis. To that end, the reduction in numbers of men needed for national service until the final call-up in 1960 was to be made by raising the age of entry of national servicemen from 18 years and nine months to 21 years. No man was to be called up for national service after the end of 1960. Men born in 1938 and 1939 would be called up for two years, but those, *e.g.* students and apprentices, whose services had been deferred, and whose deferments expired after 1960 would not be liable to call-up, but those with deferments expiring before 1960 would become liable to two years' army service. No man born in 1940 would be called up for service. It was planned that the last national serviceman would leave the forces in 1962, when the regular army would be restricted to voluntarily enlisted men.

**National Socialism.** See Nazism.

**National Sporting Club, THE.** Former h.q. of British boxing. Founded in 1891 on the site of Evans's coffee house in King Street, Covent Garden, London, it issued its own code of rules. The 5th earl of Lonsdale was president from its inauguration until it closed in 1929 (when the British boxing board of control was formed). Resuscitated in 1935 as a social club for sportsmen, from 1955 the N.S.C. made its h.q. at the Café Royal, Regent Street, London, W.1.

**National Stud.** Stud farm for thoroughbred horses, the property of the British government and administered by the ministry of Agriculture. It started in 1916 at Tully, co Kildare, when William Hall Walker, created Lord Waverley 1919 (1856-1933), presented his stud to the nation. In 1942-43 it was transferred to Gillingham, Dorset. In practice the stud is conducted on similar lines to those of private or commercial studs. Yearlings are offered for sale by auction, except a few which are

leased to private owners for racing. The stud also maintains stallions, which serve a limited number of mares.

**National Theatre.** The project to institute and build a national theatre in Great Britain was launched in 1908. Almost the last European country to realize and acknowledge the value of drama as a national institution (France recognized the need by founding the Comédie Française in 1680). Great Britain at first depended for the formation of this scheme on the generosity of wealthy benefactors. It was launched under the title of the Shakespeare Memorial National Theatre, and a subscription list was opened, headed by Sir Carl Meyer (1851-1922), chairman of the London committee of De Beers, with £70,000. The theatre was to have been built and opened in celebration of the Shakespearian tercentenary in 1916, but the First Great War intervened.

By 1936 the original fund had increased to £150,000; a site in London was bought for £75,000. This comprised 17,000 sq. ft. on an island site in Cromwell Road, S. Kensington, facing the Victoria and Albert Museum. Plans by Sir Edwin Lutyens and Cecil Masey provided seating accommodation for over 1,000, with a stage suitable for both intimate and spectacular plays. Two or three plays were to be presented every week, and nine added annually to the repertory, three Shakespearian, three classic, and three contemporary, and a permanent company of 25-30 players engaged on yearly contracts, the management to be controlled by a director, subject to the governing body, itself nationally appointed.

The Second Great War held up further development of plans. By 1945 the S. Kensington site was considered too small, and the L.C.C. leased to the trustees a site on the right bank of the Thames, between Hungerford and Waterloo bridges in exchange for the one in Cromwell Road. It was here proposed to erect two theatres, one to accommodate 1,200, and the other to seat 500. Prospects of building were advanced in 1946 by an agreement between the Shakespearian Memorial National Theatre committee and the Old Vic.

In March, 1948, it was announced that the government proposed to supplement the committee's funds up to £1,000,000 to meet the cost of building the theatre, and the National Theatre Act, 1949,



gave effect to this. The foundation stone was laid by Queen Elizabeth (consort of George VI) on the South Bank, Lambeth, on July 13, 1951.

**National Trust.** A British society for preserving places of historic interest or natural beauty. Founded in 1895, and given statutory powers in 1907, it is governed by a council, half nominated by learned societies, and half by members of the Trust. The National Trust Act, 1937, extended the powers of the Trust to hold properties as investments, and extended the aims of the trust to include the preservation of buildings, etc., of national, architectural, historic, or artistic interest, the protection and augmentation of their amenities, and the acquisition of furniture, pictures, etc., having a similar interest.

National Trust property is acquired either by purchase or by gift. When property is given no death duties are payable. Estates are in general leased to individuals, who are bound to allow access to the public at intervals. Beauty spots owned by the trust include Stonehenge; Leith Hill, in Surrey; Bolt Head, Devon; Longshaw Moor, near Sheffield; and tracts in the Lake District and the New Forest. Among private estates presented to or acquired by the National Trust are Barrington Court, near Ilminster; Bateman's, Rudyard Kipling's house at Burwash, Sussex; Lord Astor's estate of Cliveden, at Cookham-on-Thames; and Sir Charles Trevelyan's estate at Wallington, Northumberland, at the time of its presentation the largest ever made over to the trust. Other buildings of interest include the George Inn, Southwark, and Flatford Mill, Suffolk, made famous by Constable's painting.

The trust's full name is the National Trust for Places of Historic Interest or Natural Beauty; the offices are at 7, Buckingham Palace Gardens, London, S.W.1. The Scottish National Trust is an independent body, and owns among other property the Pass of Glencoe. See Ancient Monuments; consult On Trust for the Nation, C. Williams-Ellis, 1946, etc.

**National Unions.** Voluntary associations for certain purposes of persons, corporations, and groups within a country: for example, the National Union of Manufacturers, the National Union of Mineworkers. National unions may be associations of employers or of employees, and may be registered trade unions. Most of

them first began as organizations concerned only with one branch of trade or industry or one craft; and frequently they had at first only a localized interest. But most associations of employers and employed have found it advisable to amalgamate or federate with others having allied interests. The whole tendency of recent years has been towards ever larger associations, culminating in this country in the Federation of British Industries, the British Confederation of Employers, the Association of Chambers of Commerce, the Trades Union Congress General Council, and the Scottish Trades Union Congress General Council. From 1932 to 1946 the membership of trade unions increased from 4.4 millions to 8.7 millions, yet the number of trade unions decreased from 1,081 to 753, and of these 17 unions have practically two-thirds of all the members. The Official Directory of Employers' Associations, Trade Unions, Joint Organizations, etc. (1947), includes 1,943 Employers' Associations, most of which are affiliated to national unions, federations, and confederations, and 814 trade unions and other employees' associations, most of which are affiliated to the Trades Union Congress, either directly or through national federations. Consult The Industrial Relations Handbook, particularly Section III and Section XIII.

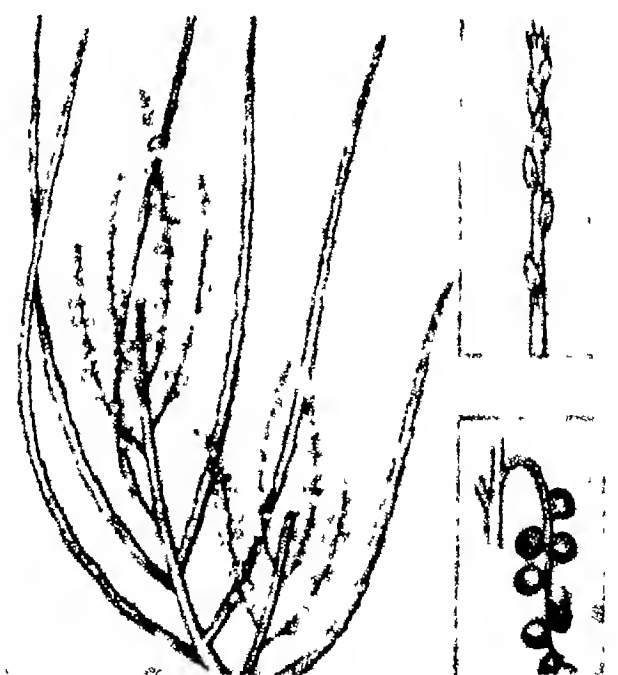
**National University of Ireland.** Irish university, founded in 1908. It arose owing to the demand of the Irish Roman Catholics for university education, and is in a sense the successor of the Royal University of Ireland, dissolved in that year, two of whose colleges—viz. University College, Cork, and University College, Galway—are included in it; while a third university college was opened in Dublin. S. Patrick's College, Maynooth, is a recognized college. It is controlled by the Roman Catholics, although there are, strictly speaking, no religious tests. Degrees are granted in arts, philosophy and sociology, Celtic studies, science, law, medicine, engineering and architecture, commerce, and agricultural and dairy science. Irish is obligatory for matriculation. The constituent college at Dublin occupies premises on Earlsfort Terrace. See Cork; Dublin; Galway; Ireland: Education.

**National Wealth.** The source of the incomes of the people of a nation, i.e. the source of the supply of goods and services avail-

able to them. The national wealth includes all those things that may have an exchange value, e.g. land and its various capacities for profitable use in industry and trade; natural resources, such as forests, minerals, water supply, etc.; the stock of buildings and their contents, such as machines, vehicles, furniture, industrial materials, food, etc.; the social framework to facilitate production, exchange, and distribution; and the various skills of the inhabitants; together with investments abroad and other rights which entitle the nation or individuals within the nation to receive goods from abroad, and the nation's stock of gold and other forms of money having an intrinsic value. No complete valuation of Great Britain's national wealth exists. The Economic Survey for 1950 estimated the value of the national income during 1950 (i.e. the flow of goods and services derived from the national wealth) at about £10,000,000,000.

**Native** (Lat. *nativus*, natural). Minerological term. It is used to describe minerals which consist of a single element, generally a metal, which is in the free state, i.e. not combined with any other element. Gold, silver, platinum, mercury, copper, and arsenic commonly occur thus. Sulphur and diamond (carbon) are instances of native non-metals.

**Native Currants** (*Leptomeria billardieri*). Shrub of the family Santalaceae, native of Australia.



Native Currants. Branches with flowers. Inset, above, end of branch with leaves; below, fruit

The numerous slender branches are erect, and without leaves except near their extremities, where they are very small. The minute white flowers are borne in spikes and produce small greenish-red, currant-like berries, which are fleshy and edible. They are acid and somewhat astringent, but they make a good preserve and a

cooling, acid beverage. They are not related to the British garden currants, or to the dried currants of E. Europe.

**Nativity.** Name of several festivals in the Christian churches. That of Christ's Nativity (Lat. *Festum Nativitatis*; Fr. *Noël*), usually known as Christmas Day, has been celebrated since the 5th century on Dec. 25. The Nativity of the B. V. M., a Roman Catholic festival, mentioned in the 9th century, is kept by Greeks and Latins on Sept. 8; and that of S. John Baptist on June 24. Representations of Christ's Nativity occur often in carvings on early sarcophagi, ivory carvings of the 8th and 9th centuries, in MS. illuminations, stained glass, and wall-paintings. On the Morning of Christ's Nativity is the title of an ode by Milton, 1629. Nativity plays, or dramatic representations of the circumstances surrounding the birth of Christ, with shepherds, wise men, and angels among the characters, are derived from the medieval mystery plays performed originally in churches. They were revived in a more sophisticated form in many English churches and chapels in the 20th century, notably at St. Hilary, Cornwall, and S. Martin-in-the-Fields, London, as a part of the Christmas celebrations. In astrology the word nativity is used as a synonym for horoscope. See *Mystery Play*.

**Natrolite.** In mineralogy, a hydrous calcium sodium aluminium silicate of the zeolite group. Semi-transparent to transparent, it is yellow, red, grey, or colourless with a glassy lustre, and is found in cavities in basalt and related rocks. Natrolite is used as a gem and for ornament, as it will take a high polish. See *Zeolite*.

**Natron** OR TRONA. Natural, and hence impure, sesquicarbonate of sodium,  $\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$ , containing also  $\text{Na}_2\text{SO}_4$  and  $\text{NaCl}$ . Obtained from the margins of desert lakes in Egypt, West Africa, Tibet, and the U.S.S.R.

**Natron.** Lake of Tanganyika, about 20 m. S. of Lake Magadi. Both these lakes contain enormous deposits of soda. See *Magadi*.

**Natterjack** (*Bufo calamita*). Running-toad or golden-back. It is a toad with a general resemblance to the common species, yet with several points of distinction that make identification easy at sight. It is of rather slighter build, and the limbs are proportionately shorter, while the warty skin is smoother, and down the centre of the back runs a thin

yellow line. It progresses by walking or running, instead of hopping, and is found mostly in sandy situations, drier than those affected by the common toad. The male has an internal vocal sac which distends the throat when the natterjack utters his rattling note, suggestive of the call of the nightjar. It occurs in N. and W. Europe, including Great Britain. See *Toad*.

**Nattier, JEAN MARC** (1685-1766). French painter. He was born in Paris, and secured the patronage



J. M. Nattier,  
French painter  
After Voiriot

of Louis XIV, being at first employed on drawings for the engravings of Rubens' pictures. The last forty years of his life were devoted to the painting of portraits, often of Court ladies.

**Natural.** Musical sign ♮ used to neutralise the effect of a sharp or flat. It probably derives its name from the key of C, which is known as the natural key, and had no sharps or flats. Its shape comes from the letter h (h) the old German name for B ♮ (B ♮ being called B). See *Flat*; *Sharp*.

**Natural Gas.** Gas which occurs naturally in the earth's crust. Inorganic gases such as sulphur dioxide, chlorine, carbon dioxide, nitrogen, hydrogen, etc., are generally associated with volcanic activity. Organic gases include marsh gas, firedamp, and the gases associated with petroleum. The natural gas from petroleum reservoirs is the basis of a large industry: approximately 4 billion cubic feet were marketed in the U.S.A. during 1945. It is usually composed of paraffin hydrocarbons from methane to octane and even heavier. Many of these condense out and are removed from the gas. Inorganic gases are also sometimes associated with petroleum. Hydrogen sulphide is quite common; occasionally there is a high percentage of nitrogen with some helium; sometimes, as in Mexico, the gas is used commercially as a source of carbon dioxide.

**Natural History.** Term which in its original meaning was used for the study of all natural objects. As such, the study of natural history included that of zoology, botany, geology, and allied sciences. The term has gradually become less broad in its meaning, until now it is confined to zoology and botany.

Natural history is used for the more popular side of the subjects, as distinct from their scientific study. See *Botany*; *Zoology*.

**Natural History Museum.** Collection of objects of natural history. The museum of this name in Cromwell Road, S. Kensington, London, S.W.7, is part of the British Museum. It was opened in 1881 to accommodate the natural history collection in the British Museum, and so relieve the congestion there, and during 1881-85 the exhibits were removed to their new home. There are departments of zoology, entomology, botany, and mineralogy. During the Second Great War it was considerably damaged by bombs, two galleries being burnt out. See *British Museum illus.*

**Naturalisation.** Term used in law to denote the process whereby an alien becomes a subject. In almost every civilized country there are now naturalisation laws. In the United Kingdom it was, until 1870, necessary for an alien who desired to become a naturalised British subject to procure the passing of an Act of parliament in his favour.

Naturalisation in the United Kingdom is governed by the British Nationality and Status of Aliens Act, 1914, as amended by later Acts. By these statutes the home secretary may grant a certificate of naturalisation to any alien who applies for one, if the applicant satisfies the home secretary (a) that he has resided in British dominions for five years at least, of which the last year before the application must be in the United Kingdom, and four years within the preceding eight years in any part of the British dominions; or has been in the service of the crown for at least five years within the preceding eight years; (b) that he is of good character and has an adequate knowledge of the English language; (c) that he intends to reside in the British dominions or to continue in the service of the crown. The certificate has no effect until the applicant has taken the oath of allegiance. In special cases, the home secretary may grant a certificate, although the four years' residence or five years' service has not been within the preceding eight years.

A naturalised alien is in the same position as a natural born subject. Alien infant children become naturalised by their father's naturalisation, if included in the father's application; but on attaining 21 may make a declaration renouncing British nationality.



When an alien is naturalised his wife does not become a British subject unless she makes a declaration within 12 months.

If the home secretary is satisfied that a naturalisation certificate has been obtained by false representation, or fraud, or material concealment, or that the naturalised person has shown himself disloyal by act or speech, he may cancel the certificate. He has also power to cancel on certain other grounds. The Governor of any British possession may issue local naturalisation certificates and if he obtains the approval of the Home Secretary U.K. naturalisation certificates as well.

The British Nationality Act, 1948, based on agreement between representatives of the British Commonwealth, clarified the national status of U.K. citizens within the Commonwealth. It laid down that, as agreed by all Commonwealth countries except Eire, persons recognized as British in any part of the Commonwealth should be so recognized throughout it; there should be a single citizenship, based on existing U.K. law, for the U.K. and the colonies; a woman citizen of the U.K. marrying an alien should no longer automatically lose her British nationality, nor an alien woman marrying a U.K. citizen automatically acquire her husband's nationality.

In the U.S.A. an alien can only be naturalised two years after declaration on oath before a court of his intention of being naturalised, and after five years' residence in the country. He must specifically renounce allegiance to every foreign power, including that to which he formerly belonged, and must also renounce any title of nobility. See Alien; British Subject.

**Naturalism.** In philosophy, the theory that denies the existence or intervention of any being or principle outside, and higher than, nature, and interprets the whole of experience in terms of natural science. It thus resembles materialism, which is chiefly concerned with the essential nature of things, while naturalism deals with the course and causes of events.

In literature and the arts, naturalism is, strictly speaking, synonymous with realism, i.e. a close imitation of reality, but came latterly to imply insistence on the more sordid and repellent aspects of life and nature, owing to the tendency of many naturalistic artists and writers, such as Zola, to emphasise in this manner their antipathy to idealisation.

In painting, the name was originally given to the work of a group of Neapolitans, who claimed to found their art on direct observation of nature, and who had dispensed with Academy teaching. Their influence was transmitted through Ribera to Spain, where it found a nobler expression in the naturalism of Velazquez.

**Natural Philosophy.** Term originally meaning the study of the material world as a whole, now usually called natural science. In a restricted sense the term, which in general use tends to become obsolete owing to the sharper distinction now drawn between philosophy and science, is retained in the sense of physics (*q.v.*) at Oxford, Cambridge, Dublin, and the Scottish universities.

**Natural Region.** Term used in geography to indicate a unit area of a definite type. The Mediterranean region is a unit area with a definite character and, consequently with a definite type of vegetation; and the application to it of the term "natural region" implies first, that it may be inferred that similar physical and climatic conditions would necessarily produce a similar natural flora, and secondly, that the control of human development exercised by an area with its specific limitations will be exerted similarly wherever regions of this type occur. See Geography.

**Natural Selection.** Theory of evolution first propounded by Charles Darwin, which forms the basis of his book *The Origin of Species*, 1859. Plants and animals are so produced that there is not room for them all on the earth, and in the struggle for existence only a few survive. According to Darwin, the survivors are those that are best fitted for the struggle through some special variation in structure. This is developed and inherited through many generations, and emphasized and increased until there is established a new species with an advantage over others. Natural selection teaches that the differences are usually small and fortuitous; thus a species has a difference which makes it better suited to its life than its fellows. If this is inherited, its descendants will be more likely to survive.

Darwin was first led to propound his theory by studying bird life during the voyage of the *Beagle*. He noticed that the birds of certain islands showed marked differences in structure from those of the same species on the mainland. This suggested that the birds were in the process of evolving

into different species. Similarly, he noticed that, among the birds on the mainland, different species of the same family in adjacent districts gradually merged into each other, as though they had been permanently altered by their environment.

The theory of natural selection, which was simultaneously propounded by Alfred Russel Wallace, aroused the enmity of churchmen, who regarded the doctrine as a dangerous attack upon the Biblical account of creation, especially when Darwin later extended it to explain the origin of man. Although natural selection is often called the "survival of the fittest," it is worth noting that this phrase was not used by Darwin, but coined later by Herbert Spencer. See Evolution.

**Natural Theology.** Branch of theology concerned with proofs of the existence and nature of God, apart from revelation. It is claimed that if God had not revealed Himself to man through the Bible or in any other way, we should still have sufficient reason, if not proof, for believing in His existence.

The ontological argument is based on Plato's theory of universal and necessary ideas, developed by S. Anselm and advocated in a rather different sense by Descartes. All men, it is argued, possess or can possess the notion of a perfect being. But perfection implies existence, for a non-existent being lacks something, viz. existence, and is therefore not perfect. Therefore a perfect Being must exist. The validity of this argument was criticised by Kant, who argued that we can conceive perfection either as existent or non-existent.

The cosmological argument views the universe as an effect, and maintains that its existence necessarily implies a cause, i.e. God. Or, expressing it differently, the universe exists contingently and dependently; and this implies the existence of the absolute and independent. This argument assumes the contingency of the universe, but fails to prove it.

The teleological argument may be stated thus: The more we study the world of phenomena, the more we see how everything tends to some end and serves some purpose. Hence we have evidence on all hands that phenomena are the result of design on the part of an intelligent designer, i.e. God. The *Bridgewater Treatises* and other more or less scientific works were written in support of this thesis, but the discovery of the laws of

evolution has thrown a very different light on the subject.

Another argument points out that mankind gives a general consent to the idea of a God, and urges that what is universally believed cannot be without foundation. But a general notion may conceivably be erroneous. Another argument is based upon design in history, and urges that the whole course of events points to a controlling influence from without.

It has also been urged—notably by Kant—that the moral nature of man points to a categorical imperative external to himself, whose authority he is unable to ignore. Man feels that he ought to do this and ought not to do that—irrespective of his personal wishes or immediate advantage. *See* Deism; God; Theism; Theology. *Consult* Natural Theology. W. Paley, 1802; Natural Religion, F. Max Müller, 1889; Theism and Humanism (G. How Lectures), A. J. Balfour, 1915.

**Nature.** British scientific periodical. It was founded Nov. 4, 1869, by Sir Norman Lockyer, and is published weekly by Macmillan & Co., Ltd. It presents a regular record of scientific progress, prints regularly letters to the editor which incorporate brief accounts of current research by the investigators concerned, and reviews scientific books, scientific papers, etc.

**Nature Conservancy, THE.** British body set up by royal charter early in 1949 to provide advice about, practise conservation of, and stimulate and conduct research into the wild plant and animal life of Great Britain. When nature reserves came to be designated under the National Parks and Access to the Countryside Act, Dec., 1949, they were placed in the charge of the Nature Conservancy, which by the end of 1957 was responsible for 56 reserves, scattered over England, Scotland, and Wales, with a total area of more than 120,000 acres. Among them were Morden Bog, Dorset (rare plants and insects); Tring Reservoir, Herts (rare plants and migratory birds); Holme Fen, Hunts (uncommon bog and fenland flora); Bridgwater Bay, Somerset (wildfowl and wading birds); Orfordness-Havergate, Suffolk (where the avocet re-established itself); Craig Carrig Gleisiad, Brecon (an Old Red Sandstone crag); the Cairngorms, Inverness-shire and Aberdeenshire (varied flora and fauna); St. Kilda (seabirds). It is necessary to secure permission to enter many

of these reserves. The conservancy also had research and field stations. Its h.q. is 19, Belgrave Square, London, S.W.1.

**Nature-Worship.** Ritual expression of reverence for those phenomena of the visible universe which are regarded as capable of bringing to man good or ill. Individual objects in nature, especially those displaying movement or action, have been considered as animated by unseen powers. The action of some of them can always be relied upon, and they arouse no anxiety. That of others cannot be predicted, and hence it is necessary to establish relations with them. Some phenomena become the object of approach or avoidance by processes usually classed as magical; others require propitiation.

The conception of natural objects as animated beings akin to man passes into that of personalised objects or powers, amenable to control or appeal. Out of this arises the idea of supernatural beings dominating the phenomena held to be their abode. So, too, there emerges from the animistic conception of human ghosts and of natural objects animated by spirits—human or non-human—the notion of a spirit-haunted world on the one hand, and of separate souls on the other.

Primitive thought deals with individual things; man comes into relationship, intellectual or emotional, with this particular rock, or that particular stream. The formulation of general ideas has apparently not been attained by some unprogressive peoples. It was only after prolonged reflection that man reached the abstract notion of the elements, and became capable of thinking of earth, water, fire, or sky as a whole. Nature-worship was at first, if not always, the ritual approach to a multitude of nature-spirits or nature-gods.

In a remote past worship was offered to animals and plants, because on their goodwill seemed to depend the food-supply. Indeed domestication is best explained as an unexpected outcome of their segregation as objects of sanctity under the guise of tribal totems. After men became herdsmen and tillers they realized the need for establishing relations with the powers on whose goodwill—rather than on that of the herds and crops themselves—their livelihood was seen to depend. Animal-worship and tree-worship accordingly passed

into that of the phenomena behind them, including rivers and wells, mountains and rocks, storm and rain, thunder, fire, moon, sun.

**Naucratis.** A n e c i e n t Greek colony in Lower Egypt. Situated near the modern Nebira on the Canopic arm of the Nile, it was founded by traders from Miletus in the 7th century B.C. Under Aahmes II, c. 564 B.C., it monopolised Greek trade in Egypt. Temples visited by Herodotus soon after 450 B.C. included the Hellenion, a central shrine built by eight Greek cities. Petrie excavated the site in 1885. The distinctive white-ground pottery called Naucratite is thought to have been an import from Chios.

**Naugatuck.** Borough of Connecticut, U.S.A., in New Haven co. It stands on the Naugatuck river, a source of water-power, 15 m. N.W. of New Haven by rly. Goodyear, who discovered the rubber vulcanisation process, established a factory here in 1843, and it has one of the world's largest rubber regeneration plants. The leading industry is the making of rubber products, one plant turning out 100,000 pairs of boots and shoes daily. Other manufactures include chemicals, plastics, aeroplane instruments, iron castings, and glass. Settled in 1702, the town was incorporated as a borough in 1893. Pop. (1950) 17,455.

**Naughton and Gold.** British music hall comedians. Charles John Naughton was born in Glasgow, Dec. 15, 1888, and James McGonigal (who adopted the name of Gold) was born April 21, 1886. Natural comedians and notorious practical jokers off the stage, they played in pantomime and scored a great success when they appeared with the Crazy Gang in a series of burlesque turns from 1931.

**Nauheim, BAD.** Town and watering-place of Germany. It is in Hesse, 16 m. N.E. of Frankfurt-o-M. For long it was Germany's outstanding spa for cardiac disorders, having saline waters rich in iron and carbon dioxide. Gout, rheumatism, and many skin ailments have also been treated here. The sources were used in Roman times, but the spa was inaugurated only in 1835. After the end of the Second Great War it came within the U.S. zone of occupation. Pop. (pre-war) 9,390. *Pron.* Now-hime.

**Naumburg.** Name of several German towns. The most important is Naumburg an der Saale,



in the *Land* of Saxony-Anhalt, which after the Second Great War came in the Russian zone of occupation. In the main a medieval town, it was in the early 20th century the home of various industries, including textiles, toys, and paper manufacture. The Protestant cathedral, dating from the 12th and 13th centuries, is noteworthy for its four towers and for the 12 life-size statues of the founders. Other interesting buildings are the churches of S. Wenceslaus and S. Mary. The town was the seat of a bishopric from 968, and from the 13th to the 15th century a member of the Hanseatic League. In 1564 it passed to the electors of Saxony, and it remained Saxon until handed over to Prussia in 1815. Pop. (pre-war) 31,000.

Two other Naumburgs are in Silesia: Naumburg an der Bober (Pol. Nowogród Bobrzański), near Liegnitz, has iron sulphide mines; and Naumburg am Queis (Pol. Nowogrodziec) makes pottery.

**Naupaktos** (mod. Lepanto). City of ancient Greece, in the county of the Locri Ozolae, on the N. coast of the Corinthian Gulf. It had a good harbour, now almost entirely silted up. The Athenians settled Naupaktos with Messenians deported after the war with Sparta in 455 B.C., and used it as a naval base in the Peloponnesian war.

**Nauplia** (Gr. Nauplion). Town and port of Greece. Anciently the



Nautch Girl. Punjabi dancing girls from Delhi, with their musicians

port of Argos, 6 m. N.W., it lies on the N.E. side of the gulf of the same name, and has a fair shipping trade. In the Middle Ages it belonged to Venice. It passed to the Turks, from whom it was taken by the Greeks in 1822, and was their capital until 1834. It is the capital of the nome of Argolis. Pop. (1951) 8,459.

**Nauplia, GULF OF.** Arm of the Aegean Sea, Greece. It lies between two peninsulas of the Morea,

is 20 m. across its entrance and 30 m. long. Spezzia is the chief of numerous islands. The Xeria river on which Argos stands flows into it.

**Nauru.** Island of the Pacific. Its area is 5,263 acres and it is 400 miles from the Marshall Islands. Its importance is due to its rich deposits of phosphates, producing over 1,000,000 tons a year. The island was annexed by Germany in 1888, administered jointly by the U.K., Australia, and New Zealand under League of Nations mandate 1920-47, then under U.N. trusteeship. On Dec. 27, 1940, Nauru was shelled by a German raider, the phosphate plant being badly damaged. Later, the island was bombed by Japanese aircraft and eventually occupied by Japanese troops Aug. 25, 1942. U.S. aircraft and warships attacked Nauru during 1943-44, on several occasions. On Sept. 14, 1945, the Japanese troops surrendered to Australian authorities on an Australian ship. Pop. (1951) 3,434.

**Nausea.** Medical term, derived from the Greek word for sea sickness. It describes the sensation of impending vomiting. It is a symptom of many diseases. See Vomiting.

**Nausicaa.** Ancient Greek heroine mentioned in the *Odyssey*, 6. She was the daughter of Alcinous, king of the Phaeacians, and the shipwrecked Odysseus found her playing at ball with her maidens on the shore. Pitying his plight, she conducted him to her father, by whom he was hospitably entertained. See *Odyssey*.

**Nautch Girl** (Hind. *nāch*, dance). Indian dancer. These girls are carefully chosen for their beauty when young to be priestesses to the god Rondzu, the fifth daughter being

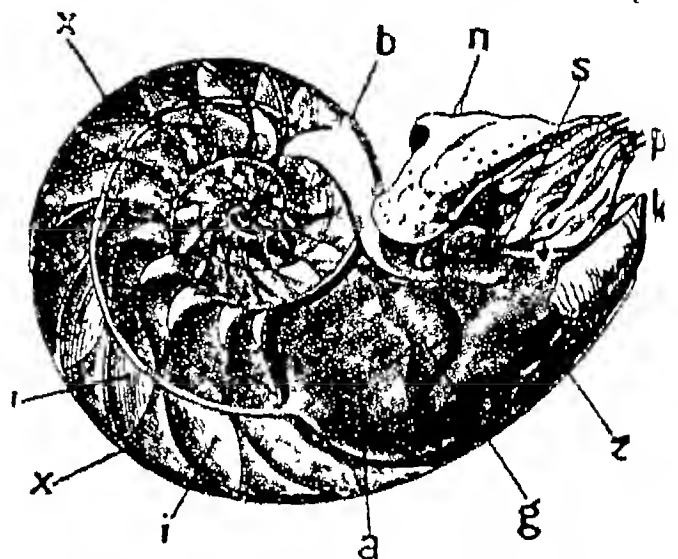
supposed to be specially suitable. Apart from their dancing in the temples, they are hired to amuse guests by dancing and singing. The dance consists of posturing and slow steps, each part of the body being made to express emotion. The dancers' costumes are very rich, often covered with jewels. See Dancing.

**Nautical Almanac.** Publication containing tables and astronomical data for the use of seamen.

The best known is the British Nautical Almanac, while others are published by the U.S.A. and France. The British Nautical Almanac was first issued in 1767 under the superintendence of Maskelyne, then astronomer royal, and from 1832 by the Admiralty. It is usually issued two or three years in advance for the sake of mariners. The offices are at the Royal Greenwich Observatory, Hurstmonceux, Sussex.

**Nautiloidea** (Gr. *nautilus*, sailor; *eidos*, form). Fossil Cephalopoda. Remains of nautiloidea are found in Cambrian to present-day deposits. They were very similar in form to the existing nautilus (*v.i.*), the only remaining living genus of the order. See Cephalopoda.

**Nautilus.** Genus of cephalopodous (head-footed) molluscs, related to the cuttles, but having



Nautilus. Sectional diagram of interior of shell of pearly nautilus. a. Mantle; b. Dorsal fold; g. Muscle attaching body to shell; i. Chambers of shell; k. Funnel; n. Hood; p. Fringed lobes surrounding mouth; s. Eye; x. Shell and septa; z. Newest chamber

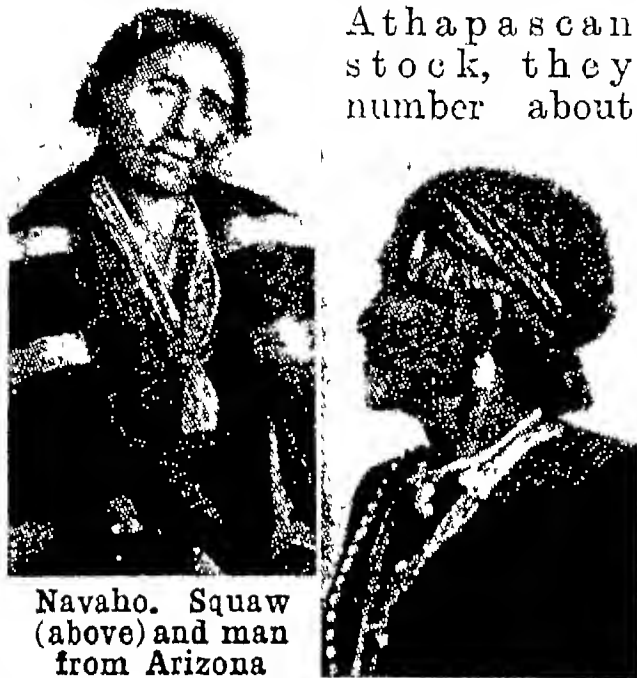
a spiral chambered shell. It is distinguished from all other cephalopods by having four gills instead of two. It lacks the tentacles of the cuttles, but has fringed lobes round the mouth. The diagram shows the coiled shell in section, the animal filling only the newest or outer chamber, the remainder containing gas. Thus the animal is buoyant in water and can move easily, crawling on its foot rather like a snail, and feeding upon other molluscs and small crustaceans. It is also able to swim like the cuttles in a series of backward jerks by expelling water from its siphon.

There are probably only three living species of nautilus, of which the pearly nautilus is the best known. It gains its name from the beautiful, white, pearly shells, valued by collectors, but in the living state the exterior of the shell is dull and porcellaneous, the colour pale brown with broad bands of darker brown. Internally the shell is remarkable for its

division by septa or thin walls into a series of chambers which mark stages in the growth of the animal. The nautilus occupies the outermost chamber only. The others are united by a slender tube or siphuncle which extends to the apex of the shell. On some parts of the coast of India the flesh is salted and dried for food.

The nautilus is of interest to the palaeontologist as being a survival of a large group of fossils, the Ammonites. It is found only in the Indo-Pacific ocean at depths below 10 fathoms, though empty shells are washed ashore in abundance. See Cephalopoda.

**Navaho** or **NAVAJO**. N. American Indian tribe. They live mostly on reservations in New Mexico and Arizona. Of Athapascan stock, they number about



Navaho. Squaw (above) and man from Arizona

28,500. Their arid pasture-lands, averaging 6,000 ft. in alt., have been improved by irrigation, and are under partial cultivation. They are skilful weavers. Their belief in a nature-goddess, "she-who-grows young," puts womanhood on a high plane. Consult The Navaho, Kluckhorn and Leighton, 1947.

**Naval Architects**, INSTITUTION OF. British technical society. Founded in 1860, it holds meetings for the discussion of ship design and general questions of interest to members. Transactions are published quarterly. Offices: 10, Upper Belgrave St., London, S.W.1.

**Naval Aviation**. Title of the aviation branch of the Royal Navy 1946-1953, when it reverted to the title Fleet Air Arm (*q.v.*).

**Naval Brigade**. Name for a body of sailors landed from a fleet to fight on shore. Famous brigades of this kind were the naval brigades of the Shannon and Powerful, which helped to defend Ladysmith during the South African War, and the mixed naval and marine brigades who were sent to assist in the defence of Antwerp in Oct., 1914. (See Antwerp.) In the Second Great War the functions of naval

brigades were performed by Royal Marine commandos.

**Naval Cadet**. Name given to boys training for commissions in the Royal Navy. Candidates, who had to be 12½ (later raised to 13½) years old, were formerly nominated by the first lord of the Admiralty, and all training was carried out in warships at sea until the early 19th cent. With the introduction of steam and the setting up of shore training establishments there was considerable distinction between cadets entering for the executive and engineering branches. In 1903 the system of nomination was abolished, as was the distinction between branches. The first two years of training were spent at Osborne, the next two at Dartmouth; in 1921 Osborne was closed and the cadets transferred to Dartmouth.

The first lord selected candidates from a committee's recommendations, subject to their passing a qualifying examination. At Dartmouth the education was on public school lines. After passing out, cadets joined ships of the Mediterranean or Atlantic fleets, becoming midshipmen after eight months afloat.

From 1953 future R.N. officers entered the Britannia Royal Naval College, Dartmouth, at 18 years as cadets. After one year they were promoted midshipman, in which rank they completed the two-year course, whether for executive, engineer, or supply and secretarial branches. Cadet entry is by competitive examination and training, which is strictly professional, is at the college and on ships attached to it. Midshipmen no longer go to sea with the fleet. After the course, midshipmen are promoted acting sub-lieutenant and posted to operational ships. Cadets and midshipmen are paid during training.

**Naval Discipline Act**. Act codifying the immemorial customs and the statutory provisions governing the maintenance of discipline in the Royal Navy, formally described as 29 and 30 Vict. C. 109. It was amended by the Naval Discipline Act of 1922 (12 and 13 Geo. 5. C. 37). See Royal Navy.

**Naval Division**, ROYAL. For details of this body, see under Royal Naval Division.

**Naval Prize Bill**. British Act of parliament which governs the computation and distribution of naval prize money. The largest amount of prize money ever awarded for a single action was the £520,000 distributed to the frigates Active and Favourite for their

capture of the Spanish vessel Hermione in 1752. After the First Great War the Naval Prize Bill was amended: instead of the prize money being awarded to ships' crews directly concerned in the action, all prize money was paid into a common fund and shared among all personnel of the navy according to rank. The total sum distributed was £9,500,000. The bill was further amended after the Second Great War to include within its scope personnel of Coastal Command of the R.A.F. Prize money of the Second Great War totalled some £12,000,000, but distribution, which averaged £25 per man, did not begin until some years later. This was the last distribution of the traditional bounty. See Prize Court; Prize Money.

**Naval Reserve**, ROYAL. Details of this body, and of the Royal Naval Volunteer Reserve, will be found under Royal Naval Reserve.

**Navan** (Irish An Uamh). Market town and urban dist. of co. Meath, Irish Republic. Standing where the Blackwater falls into the Boyne, it is a junction on the state rly., 30 m. N.W. of Dublin. Surrounded by rich agricultural land, it is also an industrial centre, manufacturing carpets, woollen goods, and agricultural implements. Tara, ancient residence of Irish kings, is 6 m. S.E. Until 1800 Navan sent two members to the Irish parliament. In 1922 its representation in the dáil was merged in that of co. Meath. Market day, Wed. Pop. (1951) 4,273.

**Navarino**, BATTLE OF. Destruction of a Turkish fleet by the British and their allies, Oct. 20, 1827. It was the decisive battle of the Greek War of Liberation. Egyptian forces, under Ibrahim Pasha, had landed in the Morea in 1825, while the Greek fleet had lingered too long in the Cyclades. Ibrahim inflicted a terrible military defeat upon the Greeks, and established himself at Navarino, whither a combined Egyptian and Turkish fleet transported reinforcements from Crete. A little later a large fleet arrived, bringing fresh strength from Egypt. Meanwhile an allied squadron proceeded to Navarino, Oct. 20, 1827.

It was hoped that the Turks would enter into negotiations, but the situation had become so tense that when a British boat was fired upon the whole line burst into flame, and a furious fight raged at the closest quarters. Probably no battle had ever been more speedily decisive. The next morning Codrington wrote: "Out of a



fleet composed of 81 men-of-war, only one frigate and 15 smaller vessels are in a state ever to put to sea again." The battle was tactically complete, and strategically decisive. Navarino, now called Pylos, is a seaport in the Morea, with a fine harbour. See Pylos.

**Navarre.** Former kingdom of S.W. Europe. Its territory lay on the western borders of France and Spain at the angle of the Bay of Biscay; and it included the W. part of the Pyrenees with a small part of Gascony and a varying area in Spain. The population was mainly Basque. When the Saracens conquered most of Spain in the 8th century, the Gothic Christian nobles held their ground in the northern mountains.

The strongest kingdom thus established in the early years of the 11th century was that of Sancho the Great, king of Navarre, who died in 1035. A hundred years later, under Alphonso I, Navarre seemed likely to absorb the Christian monarchies. In 1234, however, the crown passed to Theobald, count of Champagne, a feudatory of France, and in 1284 Navarre became an appanage of the French crown by the marriage of King Philip IV with its heiress. On the death of Louis X, 1316, Navarre passed to his daughter and then to her son Charles the Bad, being again parted from the French crown, which passed by male succession only.

In the 15th century the crowns of Navarre and Aragon were united by the marriage of Blanche of Navarre to John of Aragon; on his death, in 1479, Aragon went to Ferdinand, his son by a second marriage, while Navarre was claimed by Catherine of Foix, his grand-daughter by the first marriage. Catherine married the French Constable, Jean d'Albret, and retained French Navarre with the royal title, while Ferdinand annexed Spanish Navarre. Her daughter, Jeanne d'Albret, married Antony of Bourbon, and was the mother of King Henry of Navarre, who succeeded to the French throne as Henry IV in 1589—the first of the Bourbon kings of France. In 1620, eleven years after his death, French Navarre ceased to have the status of a kingdom.

**Navarre, OR NAVARRA.** Frontier prov. of N. Spain, bounded N. by France and sloping S. to the Ebro. Traversed by the Pyrenees and the Cantabrian Mts., it is almost wholly mountainous, reaching in Mt. Adi an alt. of 4,930 ft. Excepting the Bidassoa, which

flows N. to the Bay of Biscay, the rivers run S., falling into the Ebro. On the hills, pine, beech, oak, and chestnut forests abound; the valleys are fertile, yielding cereals, flax, wine, and oil. Sheep and cattle are reared on the grassy uplands, and game and fresh-water fish are abundant. The chief exports are livestock, wine, oil, wool, leather, and paper. The principal towns are Pamplona, the capital, and Tudela. Its area is 4,056 sq. m. Pop. 383,359.

**Navarrete, BATTLE OF.** Fought between the English under the Black Prince and the Spaniards, April 3, 1367.

The Black Prince entered Spain in the interests of Pedro the Cruel, king of Castile, with some 30,000 English, French, and mercenary troops. The Spaniards, under Henry of Trastamara, joined battle at Navarrete, a village near the French frontier. The English were in three lines, the first under Sir John Chandos, and they fought dismounted with archers on their flanks. The first of the Spanish lines, also dismounted, was under Du Guesclin. At first the English were forced back, but their archers came to the rescue, the prince hurried up his reserves, and soon the Spaniards were in flight, pursued by the English. The battle is described by Froissart.

**Nave** (Lat. *navis*, a ship). In ecclesiastical architecture, the largest, i.e. the middle, section of a church divided by piers or columns into three parts. As such the nave includes the choir and the height of the clerestory, but when the choir is shut off from the body of the church, it is commonly excluded from the term nave. See Basilica; Cathedral; Choir.

**Navel.** Scar in the centre of the abdomen, which marks the spot where the umbilical cord (*q.v.*) has been severed at birth, and, in human beings, tied.

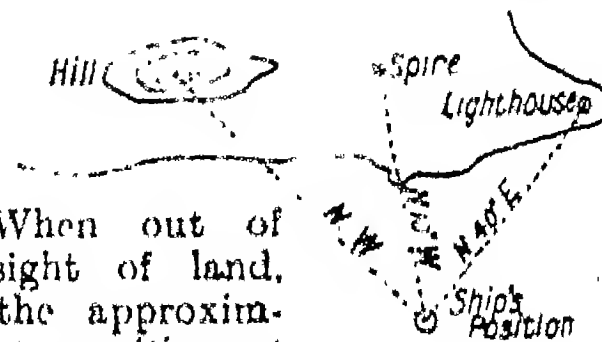
**Navicert.** Permit issued in time of war by a blockading power to allow legitimate cargoes to pass through contraband-control areas. Introduced by the British in 1915, it was, in effect, a commercial passport for goods, and was issued by British representatives before such goods left a neutral port of shipment for a neutral destination. Firms requiring navicerts inquired from the British embassy or legation if the proposed shipments would be regarded as purely neutral. If the British representative knew the consignee to be trustworthy, and the goods as such did not require a British

export licence, a navicert was issued. Thus delay and inconvenience in passing through contraband control were reduced to a minimum. The first navicerts of the Second Great War were issued on Nov. 22, 1939, and were made available between the U.S.A. and certain neutral countries near Germany. Navicerts were discontinued from Sept. 30, 1946.

**Navigation.** Art of directing a ship or aircraft from one position to another and of determining its position at any moment. In marine navigation a chart and a mariner's compass are required. Before the invention of the mariner's compass, mariners were compelled to keep in sight of land.

In order to determine the course between two positions, charts have been drawn of different portions of the globe. These charts have the latitude and longitude and the true or magnetic north marked on them. The present position of a vessel and the one it is desired to reach are plotted on the chart, which thus gives the course to be made good. The direction of this course is read off from the points of the compass pointed on the chart. To discover from the chart the course to be steered in order to arrive at any desired position, the mariner must know the position of his vessel. In sight of land this is easily found by taking compass bearings, i.e. the direction by compass of prominent objects such as a lighthouse, or church spire. The position of these objects is shown on the chart. Three or more objects are selected, so that the compass bearings cut one another at a fairly large angle when shown on the chart. Through each object on the chart is then drawn the observed compass bearing, and the point where these lines cut is the position of the ship at the time of observation.

For example, a mariner observes that the summit of a hill bears N.W., a church spire N. 10° W., and a lighthouse N. 40° E. The ship's position is where the three lines cut as shown in the figure:

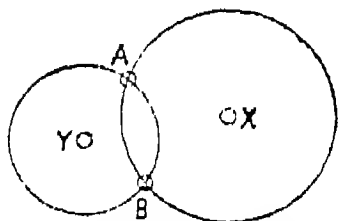


When out of sight of land, the approximate position at any time can be found by calculating the number of nautical miles the vessel has travelled along the course from the last-known position.

tion and then plotting this distance on the chart. Such an approximate position is called dead reckoning (D.R.). If the effects of currents and tidal streams, wind, weather, and other factors are taken into account, the position is called an estimated position (E.P.).

The exact position of a vessel when out of sight of land is obtained by observation of the heavenly bodies. Observations of stars or planets give the most accurate results, and are normally made during the morning and evening twilight. Several are usually visible at the same moment, but observation is difficult for a novice. On large aircraft, such observations are made by the navigator through a transparent cover fitted to the roof of the fuselage.

A sextant and a chronometer showing Greenwich time, or a known error on Greenwich time, are required for taking an observation. The altitude of the heavenly body is measured by the sextant and the time is noted at the instant the altitude is observed. The observer obtains the actual distance of his position from the point where, at the instant of observation, an imaginary line joining the centre of the earth and the heavenly body cuts the earth's surface. This imaginary point on the earth's surface is known as the geographical position of the heavenly body. The observer then knows that he is on a circle whose centre is the geographical position of the body observed, and whose arcual radius is the observed altitude. Another circle can be drawn for another star observed simultaneously, or for the same body after an interval of time. The ship's position is then at one of the points of intersection of the circles.



Navigation. Diagram showing the geographical positions X, Y, of two heavenly bodies, and A, B, the points of intersection of circles giving the position of a ship.

In practice it is not usually possible to draw the circles owing to the excessive length of the radii, so the following method is adopted. The altitude is observed at any moment and the Greenwich time noted. The D.R. position is calculated at this moment. Supposing the ship to be at the D.R. position, the altitude of the heavenly body observed can be calculated trigonometrically, as can also the direction, i.e. the bearing by compass.

Thus three factors are known: (a) The observed altitude, which must be correct, as the observer has measured it with his sextant. (b) The calculated altitude which is only correct provided the ship is in the D.R. position. (c) The direction of the heavenly body. The D.R. position is put on the chart and through this position the direction of the heavenly body is drawn. The difference between the observed and calculated altitudes is noted, and from this on the chart the true position is obtained, drawing what are known as position lines. This method is that commonly used by mariners.

Navigating in the air is in general similar to that of navigating a ship, but is influenced by a number of differing conditions. Air speeds are much higher than sea speeds, and great rapidity and accuracy are required. The air navigator does not have to consider dangers comparable with rocks and shoals; consequently the seaman's need for accuracy of position is not so important for an aircraft; on the other hand, a greater degree of accuracy of time is essential in the air. The effect of wind on an aircraft is similar to that of tides and currents on a ship, both producing angles of drift; but in the case of aircraft a much greater displacement off course is effected in a given time. The principal instruments used in aircraft navigation are: compass, drift indicator, directional gyro, and calculator for the vector triangle—these ensure the desired course being maintained; air speed computer, air speed indicator, sight for observation of ground speed, which, used in conjunction with the altimeter and height computer, enable the height of the ground above sea level to be computed from the map—these instruments determine distance run; a compass for observation of bearings or fixing the direction of objects the position of which is known and recognizable from the map, altimeter for determining the altitude of the aircraft above ground level, sextant for observing the sun, moon, and stars, so fixing geographical position; a watch to give the exact G.M.T. of the astronomical and observational tables—these fix the position of the aircraft. Both ships and aircraft use radio direction-finding for establishing position, but such instruments require the cooperation of land or shore stations. Position can also be established by radar (q.v.), which is playing an

increasing part in modern navigation. Radio and radar aids have the great advantage of being available throughout the day and night and are unaffected by weather conditions.

Navigation of land vehicles, which was a feature of the mechanised operations in the desert in the Second Great War, is generally done by means of map and compass. It is much more simple than air or sea navigation, as there are usually recognizable landmarks to assist in fixing position. Consult: The Complete Observer's Astro-Navigation, F. Chichester, 1944; The Theory of Navigation, W. Alexander, 1944; Elementary Marine Navigation, S. Walling and J. Hill, 1944; A History of Air Navigation, A. Hughes, 1946; Admiralty Manual of Navigation, published annually.

**Navigation Acts.** Term applied to a number of enactments designed to regulate shipping to the advantage of British ships. Such legislation is to be found in the reigns of Richard II, Henry VII, and Elizabeth I, but Cromwell's Navigation Act of 1651 was the first comprehensive enactment. This Act, directed against the very profitable Dutch carrying trade, refused admission into English ports of all goods not carried in English ships, or in the ships of the country of origin, while English goods could be exported only in English vessels. It benefited English shipping, but it raised the price of imports and caused a war with the Dutch. Enactments in 1660 and 1663 forbade colonial trade to any but English ships, a restriction destined to be a great source of trouble with the American colonies. The Acts were completely repealed in 1849, and in 1854 even the coastwise trade was thrown open.

**Navigators' Islands.** Original name of the islands in the Pacific Ocean now known as the Samoan Group (q.v.). They were so named by their discoverer, Louis Antoine de Bougainville, 1768.

**Naville, ÉDOUARD HENRI** (1844-1926). Swiss Egyptologist. Born at Geneva, June 14, 1844, he studied in Geneva, London, Paris, and Berlin. In 1869 he proceeded to Egypt, where from 1883 onwards he carried out important excavations, partly on behalf of the Egypt Exploration Fund. They included the store-city of Pithom, Goshen, the city of Onias, and the two funerary temples of Deir El-Bahari. English translations of his works include Archaeology



of the Old Testament; Was the Old Testament written in Hebrew? He died at Geneva, Switzerland, Oct. 17, 1926.

**Navsari** OR NOSARI. Town of Bombay, India, in the district of Surat. It stands on the left bank of the river Puma, 149 m. N. of Bombay, and can be reached by small ships. It is also on the rly. linking Bombay with Surat and Baroda. The Zoroastrian priesthood of the Parsees receive their initiation and training at Navsari, which has been a centre of the Parsees since their arrival in India. Pop. (1951) 44,663.

**Navvy.** Name applied to a labourer employed on road making or other digging operations. The word is an abbreviation of navigator, the term applied in the late 18th and early 19th centuries to a labourer employed in digging canals. It was later applied to unskilled labourers on roads and railways. A steam navvy is a machine for digging. See Excavator.

**Navy** (Lat. *navis*, ship). Term used for the collection of men and ships that form the force a country maintains for fighting at sea. Originally it described all a nation's vessels, whether used for trade or warfare. At the present day, practically every country which has a seaboard has a navy, although a number of them are of little value as fighting units.

The first navy of note was that of Athens, although as early as 664 B.C. both Corinth and Corcyra had fleets of fighting ships, as a little later had nearly all the little states of Greece. The Persians and Egyptians had fleets about this time, and the battle of Salamis was fought in 480 B.C. between the Persians and a navy composed of ships supplied by Athens and her allies. The Athenian navy, which owed much to Themistocles, appears to have been well organized, with an efficient and trained personnel, and its services to Athens and her allies during the Peloponnesian War gave the world its first great lesson in the value of sea power. Unlike the European navies of the 16th century, it was a collection of vessels, the long ships, maintained by the state solely for fighting purposes, not one assembled hastily from various ports and owners to meet an emergency.

Rome and Carthage had each a navy of considerable size, and one was established for the eastern empire. Much of their work consisted in the suppression of pirates, who then, as later, swarmed in the Mediterranean. Partly for the

same reason navies were maintained by Venice, Genoa, and other trading states. The later navies of modern European powers arose from the few vessels maintained by the sovereigns. Spain had, early, a considerable navy, while England and the Dutch republic soon made reputations on the sea. Scotland and France were among other countries that possessed small royal navies in the 15th century, as did Portugal and Denmark. Somewhat later, Frederick William laid the foundation of the navy of Prussia, and Peter the Great rendered a like service to Russia.

#### From Merchantman to Warship

There was in early navies no sharp distinction between a warship and a merchantman. The merchantman was, of necessity, always ready to fight, and the navy was simply a collection of these, after extra men and arms had been provided, reinforced perhaps by a few vessels built more especially for fighting purposes. In the 18th century navies came to consist of ships built solely for fighting, and it was such that fought the battles of the Napoleonic period.

For many years after Trafalgar there was little change in the essentials of the world's navies, but in the second half of the 19th century began the evolution of the modern navy and of specialised vessels.

As regards navies in general before the First Great War, the tendency was to look at them from the point of view of relative strength. The British navy had long been unquestionably stronger than any other taken singly, but its directors were forced to consider the possibility of a combination against it. Thus was evolved the two-power standard, i.e. the theory that the British navy should be equal to the next two combined. The two-power standard was maintained against France and Russia, but the rapid growth of the German navy imperilled it.

After the First Great War the principal naval powers made plans for maintaining greatly expanded fleets, and the end of hostilities had left Great Britain and the U.S.A. with large numbers of new warships of all types laid down during the war. Eventually, however, a series of international treaties, of which the Washington agreement of 1922 was the first, restricted building, particularly in heavy categories, such as battleships and cruisers. These treaties gave the U.K. and the U.S.A.

parity, the next strongest fleet being the Japanese on a ratio of five to three.

Although they did much to stem naval competition, the terms of the agreements led to considerable ill-will among the signatories; notably, between the U.K., the U.S.A., and France on the one hand and Italy and Japan on the other. Moreover, as was later proved, the restrictions were deliberately evaded, especially by Japan. By the Versailles Treaty, Germany was forbidden to build or maintain warships in excess of 10,000 tons, or any submarines. With the establishment of the Nazi regime, these stipulations were openly disregarded, and even the so-called pocket battleships of 10,000 tons were, in fact, nearer 15,000 tons.

#### Importance of the Battleship

Development of the submarine in the First Great War had suggested that the day of the big battleship was over, but new underwater defences restored the capital ship's importance, and in the Second Great War it was still a decisive factor in naval warfare. Aircraft were little used in the First Great War, but later the development of the ship-borne bomber and torpedo-carrying aeroplane inspired a general belief that the battleship could not survive air attack. Here, again, events disproved theory, and battleships operated efficiently and decisively even in narrow waters, such as the Mediterranean, provided they themselves had air cover. The battleship and the aircraft carrier, in fact, became complementary.

Because of the necessity of sailing in convoy, modern navies are obliged to devote much of their total tonnage to small escort vessels. Navies and mercantile marines in wartime now form almost a single service. In Great Britain this has raised the status of the mercantile marine, a fact recognized by officially designating it the Merchant Navy. As a result of experience gained in the Second Great War, merchantmen reverted in some ways to the type existing until the beginning of the 19th century, being heavily armed, many of them performing the functions of warships; some even carried their own fighter aircraft.

Comparative naval strength was radically altered as a result of the Second Great War. In 1939 the British navy was by a considerable margin the most powerful afloat. By the end of hostilities,

Italy, Germany, and Japan had ceased to be of any naval consequence, while Great Britain drastically reduced her fleet. The U.S.A. had built great numbers of warships of all types during 1938-45, and although she too demobilised many ships and personnel, she was in 1958 the world's dominant naval power.

Development of guided missiles, atomic weapons, and nuclear submarines in the 1950s revolutionised the type of ship upon which naval strength was based. The aircraft carrier, the fast anti-submarine frigate, and the convoy escort became the backbone of sea power. The capital ship was rendered obsolete, and in 1958 the R.N. had one only, and that in reserve. Of the great powers only the U.S.A. retained one in commission, chiefly for prestige. A navy ceased to be regarded as a fleet and was organized into groups of small warships, none above cruiser category, each centred around an aircraft carrier. The groups had their supply ships attached so that in the event of the destruction of land bases by nuclear attack they could refuel, re-arm, and revictual at sea. *See Royal Navy. Consult Brassey's Naval Annual, 1886, foll.; All the World's Fighting Ships, Jane, 1898, foll.*

**Navy Board.** Former department of the British naval administration. It dated from the reign of Henry VIII, and was that part of the board of admiralty responsible for civil administration, including the work of shipbuilding, dockyards, etc., as distinct from the office of lord high admiral. The organization was changed from time to time, but the divided control was maintained. Samuel Pepys (*q.v.*) was secretary to the Navy Board 1665-1679. In 1683 the work of victualling the fleet was taken from the navy board. In 1831 the navy board and the victualling board were abolished as distinct departments, and came under the direct control of the admiralty. *See Admiralty, Board of.*

**Navy League.** British society founded in 1895 for the purpose of arousing and maintaining interest in the navy. The league is responsible for the organization of the Sea Cadet Corps (*q.v.*). It publishes a monthly journal *The Navy*. Its office is at Grand Buildings, Trafalgar Square, London, S.W.1.

**Navy List.** Official handbook of the British navy. First issued in 1814, it was published monthly until the Second Great War. It gave the names of all officers in the

different branches of the service, and also the names of all H.M. ships and their stations. A quarterly edition contained full information about admiralty departments, in addition to details in the monthly lists. The monthly and quarterly lists ceased to be on public sale in Sept., 1939. An abbreviated annual list, available to the public from 1949, gives details of R.N. promotions and appointments.

**Navy Week.** Week during which the public are allowed to inspect British warships at certain home ports. In 1928 a committee of naval officers and men received Admiralty authority to hold a week's public display of naval activities at Portsmouth, Plymouth, and Chatham, the proceeds to be allocated among naval charities. In 1932 a permanent executive staff was formed. With the exception of these salaried posts, Navy Week is on a strictly voluntary basis. It is generally observed in the first week in August, to coincide with the dockyard holiday, and realizes an average of £25,000 from the three ports; part goes to a trust fund, the remainder to naval hospitals and orphanages. Interrupted by the Second Great War, Navy Week was revived in 1948.

**Nawanagar.** Former princely state of India. It occupied the N.W. of the Kathiawar peninsula, with a coast-line on the Gulf of Cutch and the Little Rann of Cutch, and had an area of 3,791 sq. m. It was the leading state among those which in 1948 merged to form Saurashtra (itself absorbed in Bombay in 1956). The cricketer Ranjitsinhji (*q.v.*) was maharaja of Nawanagar.

Its capital was Jamnagar, a city and port on the Gulf of Cutch, 160 m. W.S.W. of Ahmadabad, also sometimes called Nawanagar; it has cloth factories and a pearl fishery, and is the h.q. of the district of Halar. Pop. (1951) 104,419.

**Naxos** OR NAXIA. Largest island of the Cyclades group, in the Grecian Archipelago. It has a length of 21 m. and a breadth of 15 m.; area about 175 sq. m. It is mountainous, picturesque, and fertile, its highest point being Mt. Zea, 3,300 ft. It is noted for wine, and also produces cereals, olive oil, fruit, cotton, and emery. Its marble quarries have been worked since the 6th century B.C. The capital is Naxos, a seaport on the N.W. coast; it has an old castle, a remnant of the Venetian period. Colonised by

Ionians, about 1000 B.C., it suffered in the Persian wars. Off Naxos, 376 B.C., the Athenians utterly defeated the Spartans in a naval engagement. It was captured by the Turks 1566.

**Nayanagar.** *See* Beawar.

**Naya Paisa** (Hind., new piece). Coin introduced in India in 1957 when that country adopted a decimal coinage. A rupee is worth 100 naye paise.

**Nayar** OR NAIR. People of the Malabar coast, S. India. The Narae of Pliny, living between Point Dely and Cape Comorin, they number approximately 1,000,000. A community rather than a caste, with exogamous clans, they retain various matriarchal customs, matrilineal descent, and a form of union, *sambandham*, which involves no marital obligation and no dowry. This received government recognition in 1896.

**Nayarit.** State of Mexico, on the Pacific coast backed by the Sierra de Nayarit. The chief river is the Santiago or Rio Grande de Lerma. The principal products are wheat, sugar, tobacco, coffee, and palm oil; gold, silver, and lead are mined. Tepic is the capital. Area 11,300 sq. m. Pop. (1950) 290,124.

**Nazarene.** Term used in the N.T. In Matt. 2, v. 23, it is said that Joseph went and dwelt in a city called Nazareth, "that it might be fulfilled which was spoken by the prophets, that He (*i.e.* the Messiah) should be called a Nazarene." The particular words spoken by the prophets have not been preserved in the O.T. as we have it, unless the writer in some way identifies Nazarene with Nazarete (*cf.* Judges 13, v. 5, "the child shall be a Nazarete, and shall begin to save Israel"). In any case, in Matt. 2 the primary meaning of Nazarene is taken to be "a dweller in Nazareth," and Jesus is often so described (Mark 1, v. 24; Luke 18, v. 37; John 19, v. 19; Acts 3, v. 6, etc.). Nazareth being a small place, the term Nazarene was sometimes, though not always, used in scorn. At Antioch the first Christians were called Nazarenes, and they continued to be so called by the Jews (Acts 11, v. 26). In Acts 24, v. 5, S. Paul is called "a ring-leader of the sect of the Nazarenes."

The term Nazarene was applied to a group of German religious painters of the early 19th century. *See* Overbeck, F.

**Nazareth.** Town in Galilee, situated on the slope of a hill half-way between the Lake of Galilee and the sea. Now known as





Nazareth. General view of this town in Galilee from the hills to the north-west

En-Nasira, it is famed as the early home of Christ, and the surrounding district is notably fertile. Nazareth was occupied by British forces, Sept. 20, 1918. Pop. 14,200.

**Nazarites** OR NAZIRITES. Word meaning separated, and applied to certain Jews. These devoted themselves to the service of God, abstained from wine and all products of the grape, allowed their hair to grow long, and avoided contact with dead bodies. Samson and Johr the Baptist were consecrated Nazarites from their birth; but as a rule the vow was only temporary, usually taken for a month, at the termination of which period certain sacrifices were offered, and the head was ceremonially shaved. The Law of Moses prescribed certain regulations concerning it (Num. 6).

**Naze, THE.** Headland of Essex, England, 5 m. S. of Harwich. See Walton-on-the-Naze.

**Nazimuddin, KHWAJA** (b. 1894). Pakistan politician. Born at Dacca, July 19, 1894, he was educated at Cambridge, became a barrister-at-law, and had a successful political career in Bengal, where he was successively minister of education, home minister, and chief minister. He became a leading member of the Muslim league. Knighted 1934, he joined with other Muslim leaders in their renunciation of British titles in 1946. On the formation of Pakistan in 1947 he became prime minister of E. Bengal prov. Second gov.-general of Pakistan, 1948-51, he was then prime minister for two years until dismissed (for "inefficiency") by his successor in the governor-generalship.

**Nazism** OR NATIONAL SOCIALISM. Political movement in Ger-

many, 1923-45, which had offshoots in some neighbouring countries. One of the many local political groups that arose after Germany's defeat in 1918 was a so-called German workers' party, formed 1919, in the back room of a Munich beerhouse. Hitler, demobilised and unemployed, was being used at this time as a spy and *agent provocateur* to watch subversive movements after the sanguinary suppression of an attempt at forming a Bavarian soviet republic. He found the German workers' party receptive of his ideas and oratory, joined it as member No. 7, and helped to build it up into a noisy, violently revolutionary and aggressive political organization. On July 29, 1921, he took the place of the former chairman, Drexler, renamed the party *Nationalsozialistische Deutsche Arbeiterpartei* (N.S.D.A.P., National Socialist German Workers' Party), and proclaimed the principle of the *Führer*: one man in supreme authority, to whom unflinching fealty was sworn by all his followers.

Hitler also advocated a military discipline, and racialism—a violent, primitive anti-Semitism coupled with exaggerated praise of the German, or Nordic, "master race." A number of other principles compiled in 1927 in the party's programme written by Gottfried Feder were dropped when the Nazis assumed power.

In foreign politics three main ideas soon emerged from the rather nebulous demands and promises by which Hitler inspired his audience: abolition of the "enforced" Versailles treaty, which he described as unfair, signed by traitors, and at pistol-point:

negation of all pacifist movements, including the League of Nations, as contrary to the heroic foundation of all life and progress; and acquisition by the sword (since there was no other way) of *Lebensraum* (living space) in the east for the German people. With these ambitions, the Munich Nazi party found, at an early date, allies and confederates in a similar extremely nationalistic and anti-Semitic movement among diehard conservatives in N. Germany, the *Deutschvolkische Freiheitspartei*, established 1920; further, Hitler gained the support of Ludendorff. Though noisy in their attacks on "Marxists" and other supporters of the Weimar republic, these parties had a membership counted at best by tens of thousands; and many who went to hear Hitler's speeches, now in larger beer-cellars such as the famous Hofbräuhaus, did so for amusement.

#### The Munich "Putsch"

The grave crisis, however, through which Germany went in 1923, when astronomic inflation deprived millions of their savings and turned the better part of the middle classes, virtually overnight, into proletarians, was the party's opportunity. A conflict arose in Sept., 1923, between the Bavarian general state commissioner von Kahr and the Reich in Berlin; and in the night of Nov. 8-9, 1923, Hitler undertook a "putsch" by which he hoped to bring the military contingent of Bavaria over to his side, and to march with it to Berlin to overthrow the government. The military commander, General von Lossow, and von Kahr, both of whom he had forced to be present at his public announcement, deserted him, however, and the troops were ordered to fire upon the demonstrators, at whose head were Hitler and Ludendorff, Goering and other leaders. Hitler escaped, 14 of his followers died, Ludendorff and many others were arrested, the party was dissolved. Hitler, captured later and sentenced to five years in Landsberg fortress, was released after less than a year upon his pledge never to try illegal means again. During this internment, which he shared with his young friend, the blindly devoted Rudolf Hess, he dictated to Hess the book *Mein Kampf*, the bible of the Nazis.

While he was in prison, the remnants of his party merged with the N. German racialist movement to form the *Nationalsozialistische Freiheitspartei*, headed by Gregor

Strasser, one of Hitler's earliest lieutenants, Ludendorff, and the former conservative von Gräfe. In that guise the Nazis contested, for the first time, a national election on May 24, 1924, and won 32 seats out of a total of 472. In the following election, Dec. 7, 1924, they held only 14 seats out of a total of 493. Released from Landsberg, Hitler re-established his own party in Feb., 1925, under its old name; Ludendorff broke with him, but most of the Reichstag members joined Hitler's Nazi party. This had adopted the red flag with the swastika, and the brown shirt; badges and ranks were introduced among the S.A. (*Sturm - Abteilungen*), originally simply defence groups for the protection of Nazi meeting-places against intruding and aggressive political adversaries.

#### Toleration by the Army

This development of a paramilitary organization, while provoking severe criticism from abroad and repressive measures by the Berlin govt., was a clever move devised and organized by the retired captain Ernst Röhm, one of Hitler's earliest backers. For it secured benevolent toleration of the movement by the Reichswehr generals, who saw in it a useful reservoir of future conscripts, and enthusiastic support from millions of the impoverished middle class, and unemployed youngsters of the working class who, in the primitive uniform of the Hitler army with its stripes and badges, overcame the sense of inferiority provoked in them by increasing shabbiness of their clothes and their hopeless search for work. In the next general election, May 10, 1928, however, the Nazis secured only 12 of 491 seats. Their press campaign, from 1922 onwards, by the *Völkischer Beobachter* in Munich, directed by Hitler, edited by Rosenberg; from 1925 by the *Illustrierte Beobachter*, edited by Wilhelm Weiss, likewise in Munich; and from 1926 by the *Berlin Angriff*, edited by Goebbels, shocked the bulk of German readers by its recklessness; as did their public demonstrations and brawls with socialists, communists, etc., their brutality, and their increasing use of deadly weapons.

This last was the chief result of the creation, in 1925, of the S.S. (*Schutz-Staffeln*), protective squads—a physical *élite* of the S.A. clad in black, and assigned as bodyguards to Hitler and other leaders of the party, later to be developed

by Himmler as pretorians, political police, and executioners of the regime. But late in 1929 Dr. Alfred Hugenberg, leader of the *Deutschnationale* (conservatives), signed with Hitler a demand for a plebiscite against the Young plan (*q.v.*), and in so doing signed the death sentence of his, previously the second strongest, party. The demand for a plebiscite failed, but many who had previously been conservatives now joined the Nazi party. The world economic crisis, with its disastrous repercussions in Germany, likewise favoured the Nazis, and when Brüning's new cabinet, lacking a stable majority and backed reluctantly by Hindenburg, dissolved parliament and held another election on Sept. 14, 1930, the Nazis entered the Reichstag as the second strongest group with 107 seats out of 577. State elections in Thuringia (*see* Frick, W.) and in Brunswick had already opened the door for some of their leaders.

#### The Election of 1932

The chance to test the power of their "totalitarian" claim against the established powers in the Reich offered itself in the presidential election of 1932. In the first poll Hitler, made eligible by a trick, won 11.3 out of 37.7 million votes; in the second 13.4 out of 36.5 million. He was defeated by Hindenburg. Drastic measures to prevent another Hitler putsch followed; S.A. and S.S., as well as the Hitler Youth, an organization imbuing boys between 14 and 18 with the Nazi idea, were suppressed. Two months later, when Papen had succeeded Brüning, all these interdicts were cancelled, and a compromise with Hitler—himself bent upon gaining absolute power—was sought. An election on July 31, 1932, gave 230 out of 608 seats to the Nazis, now by far the strongest group in parliament, Goering becoming its speaker; yet, on Aug. 13, in a conference with Hitler, Hindenburg refused to entrust "that Bohemian lance-corporal" with the task of forming a cabinet. When Papen resigned, in Nov., his War minister General von Schleicher succeeded him and tried to win the backing of the still powerful trade unions; aware of their serious financial difficulties, he had dwindling confidence in the Nazis.

Papen and his friends in industry and high finance, still hoping to exploit Hitler for their own ends, supplied him with millions in this crisis (though another election on Nov. 6 reduced

the Nazis' seats to 196), and intrigues in Hindenburg's circle against Schleicher paved the way for the *Führer's* success. On Jan. 30, 1933, he was entrusted by Hindenburg with the formation of a cabinet, which would, it was understood, be a coalition of the bourgeois parties, with Papen as vice-chancellor and wire-puller.

#### Nazism in Practice

A great torch-procession of brown- and black-shirts, singing their blood-curdling battle-songs, inaugurated the régime which, without delay, began to put into practice the "philosophy" laid down for it by Hitler and Rosenberg: (1) the disfranchisement, deprivation of rights and property, and eventual elimination, of the Jews; (2) the abolition of democratic or other electoral institutions; (3) the "stabilisation" of the peasantry by making their property inalienable by sale and indivisible (the "blood and soil" policy); (4) the abolition of Germany's federal institutions, and the introduction of centralised government with provincial governors—*Gaulciter*, or *Statthalter*—in the former *Länder*; (5) the abolition of traditional law, and its replacement by "sound popular feelings," i.e. Nazi arbitrary power; (6) the suppression of freedom of thought, speech, press, worship; (7) the creation, in the guise of employment for some seven million unemployed, of an ever increasing army, and a huge armament industry; (8) compulsory enrolment of children of both sexes from the age of 6 into Nazi training formations; (9) the elimination, by way of concentration camps, sterilisation, and progressively more drastic means, of all "anti-social elements"—especially political opponents of the Nazis; (10) corporate organization, under appointed *Führers*, of all branches of professional, economic, intellectual, artistic, etc. activity.

Fake elections and plebiscites, gradual suppression of all other parties, followed. It was impossible for anybody to secure work unless he belonged to a subsidiary organization of the party. Nearly every public office was duplicated by the creation of a corresponding party authority from the Reich cabinet downwards, so that the real power was exercised not by the state but by the party officials. Adversaries or potential adversaries, besides being imprisoned, killed, or driven into exile, were deprived of their possessions by a cunningly devised



system of currency regulations that enforced the sale—to the party or its minions—of all their possessions or credits for a fraction of their value. The currency was manipulated also to provide cheap travel in Germany for foreigners, who often thus became accessible to Nazi propaganda, and to get foreign foodstuffs and raw materials at a favourable rate of exchange. Yet the system, after exploiting all such possibilities, could prolong a semblance of success and prosperity only by successful wars of aggression: a fact cynically revealed by Hitler in *Mein Kampf*, though then ridiculed by many in Germany and abroad.

Nazism borrowed the *Führer* principle, the coloured shirts, and the salute by outstretched arm from Italy's fascism; the secret police (*Geheime Staats-Polizei*, abbreviated Gestapo) from the Bolshevik O.G.P.U. or its tsarist predecessor, the Ochrana; the chosen people theory, racialism, from Jewish history; the claim of infallibility and a number of rituals, from the R.C. church; the "Nordic" obsession from French authors such as Gobineau and Vacher de Lapouge, and the British renegade Houston Stewart Chamberlain. Even the name of the party was borrowed from an earlier Austrian group which stood for anti-Semitism and reunion with the Reich, but was not totalitarian. An anti-capitalist trend, originally represented by some of Hitler's closest collaborators—e.g. the brothers Strasser—was dropped when success approached in 1930; its advocates were killed in the famous "purge" of June 30, 1934. A huge literature, forced into circulation for the benefit of the party and its leading members (Hitler, Goering, Goebbels, Rosenberg, Ley, Darré) attempted to present national socialism as a workable, systematic, and complete political thesis.

The number of party members was usually overrated; not including the members of affiliated professional organizations, obligatory for nearly everybody in Germany, they were at the end of 1925, 27,117; 1926, 49,523; 1927, 72,590; 1928, 108,717; 1929, 178,426; 1930, 389,000; 1931, 806,294; 1932, 1,414,975; 1933 and following years, between 3½ and four million.

**DENAZIFICATION.** After Germany's unconditional surrender, May 7, 1945, the Allies agreed at Potsdam, Aug. 2, 1945, that all

members of the Nazi party who had been more than nominal participants in its activities should be removed from public and semi-public office and from positions of responsibility in important private undertakings. The Allied control council in Berlin issued a proclamation Sept. 25 including an article "completely and finally" abolishing the National Socialist party and all its organs. The Nazi party was not tried by the international court at Nuremberg, but four of its organizations, the leadership corps, the Gestapo and *Sicherheitsdienst* (S.-D.), the S.S., and the S.A., were indicted as criminal, all except the S.A. being declared guilty, Sept. 30, 1946.

Allied tribunals, and later, on the Germans' own initiative, German tribunals, were set up in each of the Allied zones to try alleged Nazis.

The French suspended all trials of mere followers in Nov., 1947. In the British zone denazification came officially to an end on Jan. 1, 1948: 2,144,022 persons out of a pop. of 22 million had been screened; 347,667 removed from their posts. In the U.S. zone, proceedings against Germans born since Jan. 1, 1919, except members of the criminal organizations, were suspended, May 3, 1947, at which date 3,330,557 Germans had been examined, and 251,845 sentenced. In the Russian zone, the denazification tribunals were dissolved on April 10.

After their acquittal by the international court at Nuremberg, Fritzsche, Papen, and Schacht were re-arrested and sentenced as major Nazi offenders, the first two by a German denazification court (*Spruchkammer*) at Nuremberg to 9 and 8 years respectively in a labour camp; the third at Stuttgart to 8 years. After appeals and retrials, Schacht was acquitted, and Fritzsche and Papen were later set free on compassionate grounds. As late as 1949-50 certain *Gauleiters* and heads of Nazi party organizations were still being discovered in hiding, but in general denazification was considered to have been completed. In the Russian zone there was a series of amnesties for former Nazis; many joined the Communist party.

A recrudescence of the Nazi spirit was evidenced by replies, in public opinion polls held in the U.S. zone, to the question "Was National Socialism merely a good idea badly carried out?" In 1946 40 p.c. answered "yes" to this question, in 1947 52 p.c., and

in 1949 55½ p.c. At the time of the federal election of 1949 several quasi-Nazi parties began to appear, but pro-Nazi activities remained clandestine.

**Nazrana** OR NAZAR. Term commonly used in India for a ceremonial present, especially one given by an inferior to a superior. The word properly means a vow or votive offering, and the root may be seen in the name of the Hebrew devotees, the Nazarites. Other forms of the word are nuzzerand and nuzzer.

**Neagh.** Lough or lake of N. Ireland. In the prov. of Ulster, it is bordered by the counties of Antrim, Londonderry, Tyrone, Armagh, and Down. It is the most extensive sheet of fresh water in the United Kingdom, and measures 18 m. in length and 10 m. in breadth; its greatest depth is 102 ft. Numerous rivers feed the lake, the largest of which are the Blackwater and the Upper Bann, while the Lower Bann discharges its surplus waters into the Atlantic Ocean. There is canal communication between the lough and Belfast, Newry, and Lough Erne. *Pron.* Nay.

**Neagle, ANNA.** Professional name of a British actress. Marjorie Robertson, sister of the singer



Anna Neagle,  
British actress

Stuart Robertson, was born in London, Oct. 20, 1904, and first appeared on the stage in 1925. After playing in revue, she entered films in 1930 and achieved success

by her interpretations of famous characters, e.g. Nell Gwynn and Peg of Old Drury, Queen Victoria in *Sixty Glorious Years* and Victoria the Great, Edith Cavell in a film of the same name, Amy Johnson in *They Flew Alone*. Later films included *Piccadilly Incident*, *The Courtneys of Curzon Street*, 1947; *Spring in Park Lane*, 1948; *Odette*, 1950. She reappeared on the stage from time to time, e.g. in *As You Like It*, Regent's Park, 1934; in a dramatisation of Jane Austen's *Emma*, 1944; in *The Glorious Days*, 1953. She married film director Herbert Wilcox in 1943.

**Neale, EDWARD VANSITTART** (1810-92). British cooperator. Born at Bath, April 2, 1810, he graduated at Oriel, Oxford, in 1827, and was called to the bar in 1837. He used his wealth in opening the first cooperative store in London. In 1851

he founded the Central Cooperative Agency, which failed, but was the forerunner of the Cooperative Wholesale Society. He organized cooperative societies in other parts of the kingdom, and in 1869 promoted the annual cooperative congress, of which he became secretary, during 1875-91, visiting America in the former year. He joined the Christian Social Union shortly before his death, Sept. 16, 1892. *See Cooperation.*

**Neale, JOHN MASON** (1818-66). Anglican divine and poet. He was born in London, Jan. 24, 1818, studied at Trinity, Cambridge, was ordained in 1841, and in 1846 became Warden of Sackville College, an almshouse at East Grinstead, where he remained until his death. He was a leader of the High Church movement, and was inhibited for 14 years by his bishop. Neale was one of the greatest British hymnologists, composing original hymns and translating many from the Greek and Latin. Among his translations the most popular is Jerusalem the Golden, a part of the Rhythm of Bernard of Morlaix. He published Hymns for Little Children, 1842, and Hymns for the Young, 1844. Neale died Aug. 6, 1866. *See Hymns. Consult Life, E. A. Towle, 1907.*



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**Neander, JOHANN AUGUST WILHELM** (1789-1850). German historian. He was born at Göttingen, Jan. 17, 1789, the son of a Jew, named Mendel. On baptism he changed his name to that by which he is known (Gr., new man), and went to study divinity at Halle, under Schleiermacher, whose writings had brought about his conversion. He became professor of theology at Heidelberg, 1812, and during 1813-50 was professor of church history at Berlin. He died July 14, 1850.



J. A. W. Neander,  
German historian

**Neanderthal Man.** Palaeolithic species inhabiting Europe during the Mousterian period, named after the Neanderthal near Düsseldorf where remains of the type were discovered and authenti-

cated in 1856; a specimen found at Forbes Quarry, Gibraltar, in 1848 was not described until 1864. Its fossil relics, associated with characteristic flaked flint implements, have since been found in cave sites in Europe, Malta, Palestine, and W. Russia. Neanderthal man is not an ancestor of *Homo sapiens*, and is often regarded as a distinct species, *H. neandertaliensis*.

**Neapolis** (Gr., new town). Ancient seaport in Macedonia, near the modern town of Kavala. S. Paul landed here during his second missionary journey (Acts 16).

**Neap Tides.** Those tides which reach the lowest high-water mark, the highest tides being called spring tides. Neap tides are those immediately following the first and third quarters of the moon, and their range is usually only one-third of the spring tides. *See Tides.*

**Nearchus.** Greek navigator. Born in Crete, he removed to Amphipolis in Macedonia, where he began a lifelong friendship with Alexander, whom he accompanied on his Indian campaign, 327 B.C. Appointed commander of the fleet built by Alexander on the Hydaspes, he undertook to conduct it from the mouth of the Indus along the coast to the mouth of the Euphrates. A further journey round the African and Arabian coasts was abandoned owing to Alexander's death. Nearchus was allowed by Antigonos to retain the provinces of Lycia and Pamphylia, which had been bestowed upon him by Alexander, but nothing further is positively known of him. A summary of his *Paraplous* (coasting voyage) is given in Arrian's *Indica*.

**Near East.** Term loosely applied, generally in a political rather than a geographical sense, to describe Egypt, Palestine, Turkey, and Syria. *See Far East; Middle East.*

**Neasden.** District of Middlesex, England, in the borough of Willesden. Neasden is a station on the Metropolitan and Bakerloo lines. The parish church is dedicated to S. Catherine, and is a modern building. Neasden lies on the North Circular Road. It has some industrial development, but is mainly residential.

**Neath.** Mun. borough, market town, and river port of Glamorgan-shire, Wales. It stands near the mouth of the river Neath, 8 m. from Swansea and 183 m. by rly. from London, on two canals: it is by the site of the Roman fort of Nidum (discovered 1949). The buildings include the restored church of S.

Thomas, the modern one of S. David, the town hall, and the market house. Neath lies in a profitable mining district, and has steel works, foundries, engineering works, etc. In the 12th century an abbey and castle were founded at Neath, and there are remains of both. The town became a borough about the same time and was long under the lords of Glamorgan, who allowed the citizens to hold an annual fair. Market days, Wed. and Sat. Pop. (1951) 32,305.

**Neat's Foot Oil.** Lubricant for fine machinery, also used in dressing leather. It is obtained by boiling the hoofs of cattle, for which neat is an old term, and has the advantage that it does not easily solidify or become rancid.

**Nebo or NABU.** God of the ancient Babylonians. The son and interpreter of Marduk, he was regarded as the writer of the first book and instructor of mankind in letters and science. Borsippa or Birs-Nimrud was the centre of his worship; with his consort Tashmetum, he annually visited Marduk at Babylon. Their cult became popular in Assyria, especially at Calah (Kalkhu), in the 8th and 7th centuries B.C.

**Nebraska.** *See Platte.*

**Nebraska.** N. central state of the U.S.A. Its area is 77,227 sq. m. The surface is an elevated plain sloping to a high point of 5,340 ft. in the foothills of the Rockies in the W. to a low point of 825 ft. in the area approaching the Missouri. In the N.W. are the arid "bad lands." The principal rivers, the Platte (310 m.; formed by the junction of the N. and S. Platte), the Niobrara, the Big Blue, and the Republican, all flow through the state eastward to the Missouri, the natural boundary on the E. The inland climate is dry and healthful, and the rainfall scanty (annual average 27.7 in., 46 p.c. during May, June, and July). The state has, however, become a great agricultural centre, mainly as a result of extensive irrigation schemes, covering over a million acres. Maize is the crop for which Nebraska is best known, though rye, wild hay, winter wheat, sugar beet, oats, barley, potatoes, and a variety of fruits are also grown. The state is also an important centre for the raising of cattle and the production of dairy products, Omaha, the largest city, being the greatest butter-manufacturing city in the world.

In the N.W. section fossil deposits have been found, proving the existence of man there from



10,000 to 12,000 years ago, and the skeletons of the sabre-toothed tiger, the dinosaur, and other extinct animals were also unearthed.

The state is almost entirely rural, there being only two municipalities with a pop. of more than 20,000—Lincoln, the capital, and Omaha, the industrial centre. Five rly. systems traverse the state, with over 6,200 m. of track, and the Union-Pacific rly. has its headquarters in Omaha.

Higher education is provided by a state university at Lincoln, and there are also an affiliated college of agriculture and four state colleges for teachers. Two senators and four representatives are sent to congress. In 1934 the state voted for a unicameral legislature, sitting at the Capitol at Lincoln, the 400-ft. central tower of which, surmounted by a 20-ft. statue of a sower, is a remarkable piece of architecture, built in 1934. In its early history Nebraska was the scene of many battles with the Indians, including the last fought on American soil, 1873. It was admitted to the union in 1867. Pop. (1950) 1,325,510. Nebraska city (pop. 6,872), once a flourishing river port, contains John Brown's cave, a haven for runaway slaves on the "underground rly." from the S. Consult Nebraska, Old and New, A. E. Sheldon, 1937.

**Nebuchadnezzar** OR NEBUCHADREZZAR. Name of three kings of Babylon. The most famous, Nebuchadnezzar II, son of Nabopolassar, reigned 605–562 B.C., invaded Judah thrice, taking Jerusalem and carrying many Jews into captivity, 586; captured Tyre, after a long siege; and perhaps invaded Egypt. He restored many temples and rebuilt Babylon, where Koldewey's excavations, 1899–1913, revealed his palace, temples, gates, walls, quays, and canals. The spelling Nebuchadnezzar is that used in the A.V., but Nebuchadrezzar is nearer to the original form, Nabu-Kudur-ursur meaning Nebo protect the kingdom. See Babylon: Daniel.

**Nebula** (Lat., mist). In astronomy, any celestial object not a comet having a diffuse appearance in the telescope. So many quite distinct objects of totally different structure fit this description that the modern tendency is to drop the word altogether and use a more precise terminology for the various star-clusters, galaxies, and interstellar clouds hitherto classed as nebulae. Only a few nebulae are bright enough to be seen with the naked eye as faint hazy patches of

light, but millions can be photographed with the aid of modern equipment.

The first catalogue of nebulae by Messier in 1784 was made to enable these objects to be quickly distinguished from comets. Like Messier's, the Herschels' catalogue of 5,000 nebulae included many objects subsequently found to be star-clusters. Dreyer's New General Catalogue (1887) with its supplements (1894, 1908) contains 13,226 objects, nearly all of which are true nebulae.

#### Two Main Classes

Present knowledge enables us to divide the nebulae into two main classes: galactic and extragalactic. Galactic nebulae are concentrated to the Milky Way and are therefore part of our own galactic system like the stars. They are clouds of gas and dust lying at distances comparable with stellar distances. Extragalactic nebulae avoid the neighbourhood of the Milky Way merely because local absorption in the plane of the galactic system obscures their light in that direction. They are assemblies, like our own galaxy, of hundreds of millions of stars at distances far exceeding stellar distances: they have been aptly named "island universes." The nearer ones themselves contain objects resembling galactic nebulae.

**GALACTIC NEBULAE.** These fall into three classes. The *dark nebulae* in the Milky Way are detectable only by their obscuring effect on the light of more distant stars. An example conspicuous to the naked eye is the "Coal Sack" near the Southern Cross. They lie at distances up to about 1,000 light years; beyond this they doubtless exist but are difficult to detect owing to the presence of foreground stars. There is little doubt that they consist of a mixture of dust particles and interstellar gas. The *diffuse* or *gaseous nebulae* are irregular patches of luminosity usually (perhaps always) associated with bright stars, for example the Orion nebula. They are not self-luminous but shine by reflection or fluorescence, the energy being derived from the light of stars embedded in them. Their spectra may be continuous or may consist (see Nebulium) of bright lines, according as the associated star is at a moderate or very high temperature. It is likely that the diffuse nebulae are not essentially different from dark nebulae, being just those parts of the latter which are lighted up by near-by stars. The *planetary nebulae*, of which

only about 150 are known, appear as round or oval patches of light, usually with a faint star at the centre. Their spectra show the bright lines appearing in some diffuse nebulae. They probably consist of extremely hot stars which have thrown off shells of gas that shine by fluorescence.

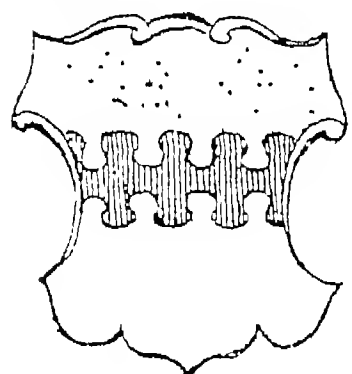
**EXTRAGALACTIC NEBULAE.** These can be classified into three types. The *elliptical nebulae* range from spheroidal to spindle-shaped objects, none of which could be resolved into stars until 1943. Their spectra, however, show that they are composed of stars, even if their distances are too great for individual stars to be distinguished. The *spiral nebulae* (see Andromeda Nebula) are more easily resolved, especially those with "open" arms. It is highly probable that our own galactic system would resemble a typical spiral nebula if we could see it from outside. The *irregular nebulae* show no common geometrical form but also consist of millions of stars. The Magellanic Clouds (*q.v.*) are the nearest of these to us. Spectrograms of the extragalactic nebulae show displacements of the spectral lines towards the red which are interpreted as due to an expansion of the universe similar to that predicted by certain forms of the theory of relativity (*q.v.*). See Astronomy; Galaxy; Stars.

A. Hunter, Ph.D., F.R.A.S.

**Nebular Hypothesis.** In astronomy, a theory to account for the origin of the planetary system. First suggested by Immanuel Kant, in 1755, and placed on a more definite basis by Laplace, the latter supposed that the matter which now forms the sun, planets, and satellites existed once in the state of gas, and that this gaseous mass formed a vast globe which extended from the sun's present position as a centre out to, or beyond, the orbit of Neptune, and that this gaseous mass was rotating. As it rotated it gradually flattened in shape, its particles were consolidated, and its speed of rotation was increased.

Under the action of increasing speed of rotation and flattening, some of the gaseous matter would be detached from the central mass in the form of a ring. This ring would break up into separate globular masses which would ultimately coalesce in the largest of them and thus form the first, and outermost, planet, and this process would be repeated, to give rise, in turn, to the other planets. See Planet.

**Nebulé.** In heraldry, a line of division, or outline of a charge, forming a series of rounded projections,



Nebulé in heraldry

pointing to each side to represent clouds.

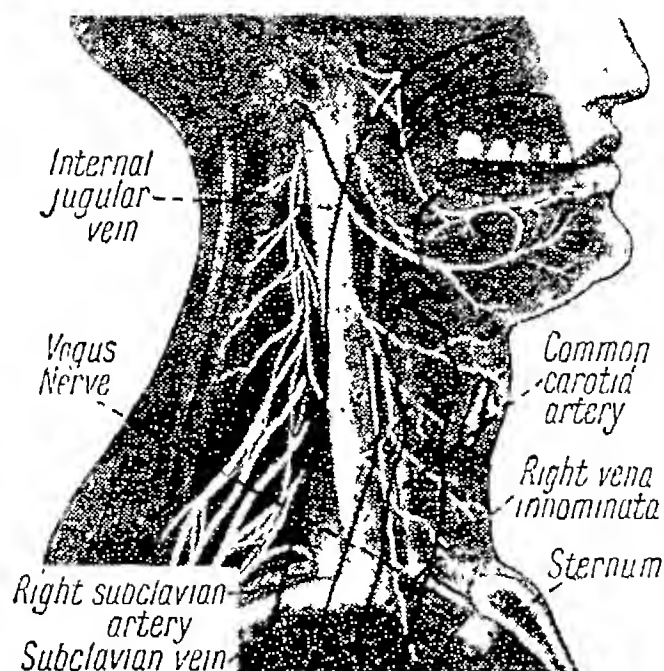
**Nebulium.**

Former name of gas responsible for the two bright green lines in the spectra of many gaseous nebulae. In 1927 Bowen identified the lines theoretically as radiations to be expected from doubly-ionized oxygen exposed to high-temperature low-pressure radiation. These conditions cannot be produced in the laboratory.

**Necessity.** Constraint or compulsion regarded as a law which makes anything what it is and excludes its being anything else. Logical necessity is the impossibility of conceiving a thing different from what, according to the laws of thought, we conceive it to be; here belongs the principle of identity  $A=A$ . Physical necessity is the certainty that a particular cause in similar conditions will be followed by a particular effect.

**Necho** OR **NEKAO** (Assyrian Niku). King of Egypt, 609-594 B.C. He succeeded his father Psammetichus I, founder of the XXVIth dynasty. The Assyrian power having fallen, he reconquered Syria, defeating and slaying Josiah of Judah at Megiddo, 608 B.C. He reached the Euphrates and on his return deposed Jehoahaz, son of Josiah, replacing him by his brother Jehoiakim. Nabopolassar, king of Babylon, sent his son Nebuchadnezzar to Syria, and Necho, defeated at Carchemish 605 B.C., and again in 601, lost his conquests in Syria and Palestine (2 Kings 23; 2 Chron. 35, 36; Jer. 46). Phoenician seamen sent by Necho are said to have circumnavigated Africa; and he began to dig a canal, completed by Darius, to link the Mediterranean with the Red Sea.

**Neck.** Part of the body which unites the head with the trunk. The neck supports the head by means of the cervical vertebrae. In front of the bony pillar lies the oesophagus, terminating above in the pharynx, and in front of these are the trachea and larynx. The thyroid gland is situated in the lower part of the neck, a lobe being on each side of the trachea with an isthmus connecting them across the middle line. The carotid arteries pass up from the thorax to the head at the side of the neck, and



Neck. Sectional view from the side, showing principal veins and nerves

can be felt pulsating close to the anterior margin of the sternomastoid muscle. The jugular veins pass downwards close to the carotid arteries. Close to these structures are the vagus and other nerves passing between the head and the trunk.

The most prominent muscles of the neck are the sterno-cleido-mastoids, one on each side, which run from the breast-bone and inner end of the collar-bone to the mastoid process, a bony prominence just behind the ear; and the trapezii, which pass up from the back and are inserted into the occipital bone at the lower part of the back of the head. See Anatomy; Fibrositis; Hanging; Man; Strangulation. Trachea.

**Neckar.** River of S. Germany, a tributary of the Rhine on the right bank. Rising near the Danube, between the Black Forest and the Swabian Jura, it flows N.E. and N. through Würtemberg-Baden, and turns W. at Eberbach to join the Rhine at Mannheim. Its length is about 250 m., and its chief tributaries on the right bank are the Fils, Rems, Kocher, and Jagst, and on the left the Ens. The chief towns on the Neckar are Tübingen, Cannstatt (a suburb of Stuttgart), Heilbronn, Heidelberg, and Mannheim. Though very rapid, the river is navigable for small vessels as far as Cannstatt. See Mannheim.

**Necker, JACQUES** (1732-1804). French financier and statesman. Born at Geneva, of Pomeranian extraction, Sept. 30, 1732, he entered the Vernet Bank at Paris about 1747, and in 1762 founded a successful bank of his own. Director of the treasury, 1776, he was



Jacques Necker, French financier

made director-general of finance in 1777. He published his *Compte Rendu*, 1781, and then retired, his treatise on French financial administration following in 1784. Exiled from Paris, 1787, he was recalled as director-general in 1788, and was responsible for summoning the states-general and doubling the representation of the third estate. Dismissed on July 11, 1789, he was recalled a few days after the fall of the Bastille. He held office until Sept., 1790, when he retired to Coppet, Switzerland, where he died on April 9, 1804. See *Vie privée de M. Necker*, Madame de Staël, 1804.

**Necker, SUZANNE CURCHOD** (1739-94). French writer. Born at Crassier, canton of Vaud, Switzerland,



Suzanne Necker, French writer

daughter of a Protestant pastor, she was for some time in love with Edward Gibbon before marrying Jacques Necker in 1764. Her salon was one of the most celebrated in Paris, frequented by such men as Diderot, Buffon, André Morellet, and Marmontel. Famed also for her charities, she founded, 1778, and for some years administered, the Hôpital Necker in Paris. She died at Coppet, Switzerland, in May, 1794. Her daughter, Anne Louise Germaine, became Madame de Staël (q.v.). See *Le Salon de Mme. Necker*, G. d'Haussonville, Eng. trans. 1882.

**Necklace.** Ornament for the neck worn by most races from the remotest times. They are usually collars of metal in the form of solid rings, gorgets, open work or filigree, textiles, or of chains, often ornamented with pendants and decorated with enamels, glass, and precious stones. The torque, worn by prominent men among the Gauls, Persians, and other ancient nations, was a rigid necklace or collar of spirally twisted gold. See *Anglo-Saxon Antiquities*; Assyria; Celt, colour plate; Jewelry.

**Necromancy** (Greek, *nekros*, corpse; *manteia*, divination). Divination by pretended communication with the dead. The art is usually exercised by professional sorcerers, as in the familiar example of the witch of Endor, in 1 Sam. 28, who professed to evoke the spirit of the prophet Samuel at the behest of Saul. In Homer's *Odyssey*, bk. 11, the conversation of Ulysses with Tiresias in Hades differs from regular necromancy in



that the shade of the departed seer was not brought back to earth. When Cortès invaded Mexico it is recorded that the spirit of Montezuma's sister Papantzin was evoked, and foretold the downfall of the Aztec empire.

Necromancy still prevails widely in primitive culture. The Zulu witch-doctor causes the voice of his *amatongo* to be heard by means of ventriloquism; in W. Africa the Ewe medicine-man in cases of sickness elicits the future course of the disease by consulting his *tro*; the Melanesian *tindalo*, or ghost, is evoked for advice such as whether a proposed canoe voyage may be safely undertaken.

In medieval Europe the word was corrupted to nigromancy, as if from Lat. *niger*, black, and in that form came to denote the black art, or witchcraft in general. See Divination; Magic.

**Necropolis** (Gr. *nekros*, corpse; *polis*, city). Word meaning a city of the dead. It was anciently applied to an outlying part of Alexandria which was set apart for burial purposes, and is used in connexion with modern cemeteries, such as those at Woking in Surrey and at Glasgow. The burial ground at Woking is served by a rly. station called Necropolis.

**Necropsy**. In medicine, name given to the examination of the body after death. See Autopsy; Post Mortem.

**Necrosis**. In pathology, the death of a limited portion of tissue. Most commonly the destruction of periosteum, or covering of the bone through which the blood-vessels enter, leads to necrosis of the bone. Generally necrosis is caused by failure of nutrition of any tissues. See Gangrene.

**Nectar**. In Greek mythology, the drink of the gods, their food being ambrosia. It was supposed to confer immortality on those who drank it, and on that account was forbidden to mortals.

**Nectaries**. Glandular structures occurring in plants which secrete nectar. This juice, in which fructose, glucose, and sucrose are commonly present, escapes through the epidermis of such nectaries as that of the buttercup. Stomata are present in the surfaces of other plants, e.g. Umbelliferae. At first syrupy, nectar becomes diluted by absorbing water from the underlying tissues. Nectaries are usually so situated that insects seeking nectar must make contact with stamen and stigmas. In Umbelli-

ferae they form an exposed cushion above the ovary between the stigmas and the insertion of the stamen. More often they occur deeper in the flower. In the Cruciferae they are on the receptacle at the bases of the stamen; in the Rosaceae, frequently within the hollow receptacle. Any part of the flower may be concerned. *Caltha* forms nectar low down on the sides of its carpels; *Viola* has on two of its stamens appendages which secrete nectar into a surrounding corolla spur. Such containers may prevent the nectar being washed away by rain. Pockets at the bases of buttercup petals secrete nectar, while in larkspur and monkshood the tubular petal nectaries have little other function. Extrafloral nectaries occur on parts of the plant other than the flower, e.g. on cherry leaf stalks. On bracken fern nectaries are found in the forks of its fronds.

**Nectarine**. Edible fruit, a smooth-skinned variety of the peach (*q.v.*). The methods of cultivation and habit of both nectarine and peach are generally identical, but the fruit of the nectarine has a richer flavour, and is more tender of skin than the peach, and therefore must not be touched by hand during development, or the ripened fruit will be bruised and spoiled.

**Nederland Line**. Dutch steamship company. Running the principal transport services between Holland and the Netherlands East Indies, it maintains frequent sailings from Amsterdam and Southampton to Singapore, Java, and other East Indian ports. Much of the fleet was lost in the Second Great War while carrying troops or cargo.

**Neditch**, MILAN (1881-1946). Yugoslav soldier. After service in the Balkan and First Great Wars, he rose to command a division in 1936 and was war minister in 1940. When Croatia broke away from Yugoslavia in 1941, the Germans made him premier of the puppet state that remained. He fled to Italy in 1945, but was captured by U.S. troops and handed over to Yugoslav authorities. It was announced that he had committed

suicide while awaiting trial some time before Feb. 6, 1946.

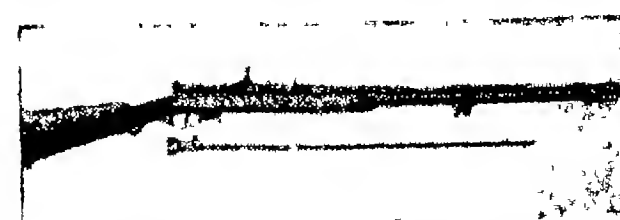
**Needham**, JOSEPH (b. 1900). British biochemist. From Oundle school he took a Benn Levy studentship in biochemistry, and lectured at Stanford, Yale, Cornell, Oxford, and Polish universities. From 1933 he was Dunn reader in bio-chemistry at Cambridge. F.R.S. in 1941, he led in 1942 the British scientific mission in China, and in 1946 became head of the division of natural sciences, UNESCO. Needham wrote *Man a Machine*, 1927; *The Sceptical Biologist*, 1929; *Chemical Embryology*, 1931; *History of Embryology*, 1935; and *Chinese Science*, 1946. His wife, Dorothy May (born Moyle, 1896), also a biochemist, was elected F.R.S. 1948.

**Needle**. Instrument used for carrying a thread in sewing or similar operations, consisting of a thin, pointed rod of steel, bone, or other material. Sewing-machine needles have an eye at the point; other sewing needles have an eye at the opposite end. Sewing

needles are defined according to their construction, use, or function, as drill-eyed, golden-eyed, sharp, blunt, carpet needle, etc. The word is also used for a thin, straight rod of bone, wood, or metal used in knitting; for a light, hooked rod used in crochet; and for a thin, flat piece of metal,

or a light metal rod pivoted at a point along its length, as in a magnetic compass, telegraphic instruments, and apparatus for measuring electric currents. Surgeons' needles for stitching wounds are curved, upholstering needles are double-pointed, sack needles have a square section, etc. See Bone Implements.

**Needle-Gun**. First successful breech-loading rifle for military use. The weapon was invented



Needle-Gun. The first successful breech-loading rifle

by a Thuringian mechanic, J. N. Dreyse, in 1839, and quantities were being manufactured by 1841, as the rifle was adopted by the



5. A fully developed nebula is shown in the photograph above. Here the nucleus has shrunk so much that the thrown-off matter surrounding it now constitutes most of the visible bulk of the object



8. The clots are nascent stars, or groups of stars, and from them by cosmic accidents planets such as the Earth may be detached ; but even the preliminary stages shown in this series have occupied many millions of years

inding the bright  
at one complete

gaseous matter is  
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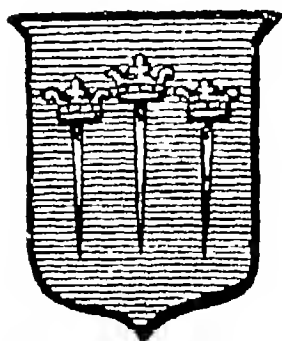
OF SUNS AND PLANETS. See text, p. 5998





Prussian army. The needle-gun was a great advance on any rifle in use at the time, and the increased rate of fire which its breech-loading made possible was of much value to the Prussians in several wars. It was of 16 bore and had a simple bolt action provided with locking lugs, and inside the bolt the spring loaded needle from which the gun took its name. It was superseded by the Mauser in 1872. *See Rifle.*

**Needlemakers' Company,** THE. London city livery company. Existing in the time of Henry



Needlemakers' Company arms

**Needles,** THE. Group of three isolated chalk rocks off the W. extremity of the Isle of Wight. The original Needle was a slender

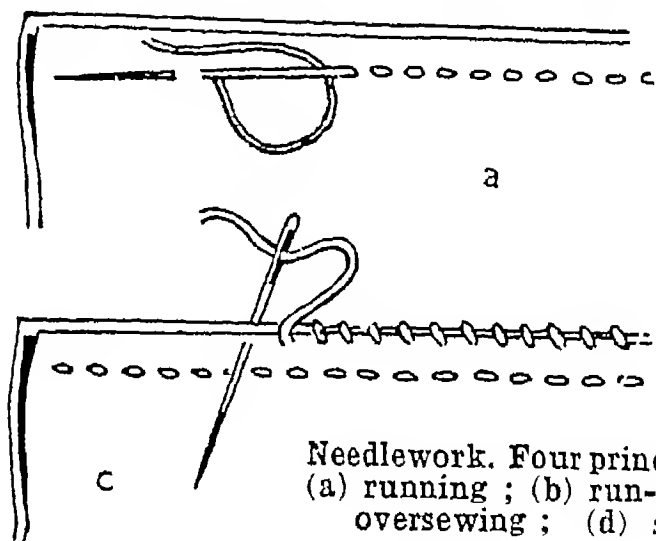


Needles. The chalk rocks off the Isle of Wight, in the English Channel

pillar of chalk which fell in 1764. Until 1820 the Needles were joined together and connected with the mainland. The westernmost rock, which attains 100 ft., bears the Needles Lighthouse, with occulting light, built in 1859. Originally lit by an oil vapour lamp, it was electrified in 1947.

**Needlework.** Handwork of a plain kind done with a needle on cloth. Needlework is one of the oldest crafts, and has developed in delicacy and fineness with the increasing fineness of fabrics, and of needles. Primarily directed to the joining together of pieces of material to form garments, needlework is also used for forms of ornamentation such as tucking and plain stitching.

By custom, needlework has been a woman's craft carried on principally in the home; but men have



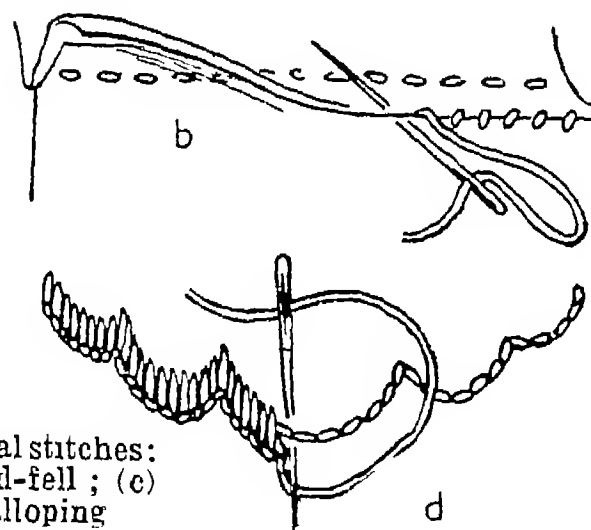
Needlework. Four principal stitches: (a) running; (b) run-and-fell; (c) oversewing; (d) scalloping

always done much of the needlework involved in men's tailoring. Sewing machines, which, first invented in 1830, began to come into general use in the 1870s, have displaced much of the hand work formerly put into both dress-making and tailoring.

The principal stitches used are running, felling, and oversewing. More decorative stitches are hem-, pin-, feather-, and buttonhole-stitching, and scalloping.

Instruction in needlework is

**Needwood.** Former forest and royal hunting ground in Staffs, England. It lay between Stafford.



Burton, and Lichfield, and is estimated to have covered about 70,000 acres. Most of the area is now under cultivation.

**Nefertiti.** Sister-queen of the Egyptian pharaoh Akhnaton. She shared his heretical devotion to the sun-disk, and is portrayed with her husband and six daughters in their new capital Akhetaton. Portrait busts found there, of which the most famous is in Berlin, show her to have been a woman of great beauty. *See plate facing p. 2964.*

**Negapatam** OR NAGAPATTINAM. Port of Madras, India, in the delta of the river Cauvery. One of the earliest settlements of the Portuguese, it was captured by the Dutch in 1660, and became British in 1781. Pop. (1951) 57,854.

**Negative.** In photography, a record produced by the action of light on a sensitised surface, in which the light portions of the subject appear dark and vice versa.

In optics, a negative lens (usually double concave) causes parallel rays of light to diverge or convergent rays to be less convergent. Added to a positive lens it forms a telephoto combination with increased focal length and consequent increase in image size.

For the use of the term negative in electricity, *see Electro-negative.*

**Negeb** (Heb., south country). South part of Israel, about 3,000 sq. m. in extent. It lies comparatively high, and varies in width from about 40 m. in the Judean hills to a few miles on the gulf of Akaba 70 m. to the S. A desert tract, it is inhabited by nomads.

**Negligence.** In law, the want of reasonable care or diligence in the performance of a duty. In order to found an action for damages for negligence, the plaintiff must show that the defendant owed some duty not to be negligent, and that, in consequence of his breach of that duty, actual damage has resulted to the plaintiff or the plaintiff's property.

given in British primary and all types of secondary schools to girls of 7-17. Children in the primary schools usually have two lessons a week of about an hour's duration, in the secondary schools one longer lesson a week. Books, magazines, diagrams, films, and apparatus are used in instruction. Attention is paid to the choice, care, and repair, as well as the making, of garments; furnishings for the school and costumes for plays are sometimes made. In the secondary grammar schools needlecraft may be offered in the school certificate examination. *See Embroidery; consult Ideas for Plain Sewing, A. Armes, 1939; Principles and Practice of Needlework and Dressmaking, A. L. Hird, 1942.*



The fact that A acts without proper care and thereby B is injured will not entitle B to recover damages from A unless A owes B a duty to take care. A famous statement of the limits of the duty to take care was given in the house of lords in 1932: "You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who then in law is my neighbour? The answer seems to be: persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called in question."

An example will illustrate the limits of the duty. Y drives his car so negligently that X is killed. A hears the collision and sees the consequences of it and receives such a shock that she is prematurely delivered of a child of which she was pregnant, the child being stillborn. She cannot recover damages from Y because Y owed her no duty. His duty to take care on the highway is limited to persons so placed that it is reasonable to expect they may be injured by his lack of care.

Until the Law Reform (Contributory Negligence) Act, 1945, where a person was injured by the negligence of another he could recover nothing if he himself had even in the smallest degree also caused the injury by his own contributory negligence. By that Act, however, such a person is entitled to recover, but the amount of damages is reduced proportionally to his share in the responsibility for the injury.

**Negoi** OR **NEGOTU**. Highest mt. in Transylvania, Rumania. Its alt. is 8,320 ft. It is a peak in the central section of the Transylvanian Alps, and rises E. of the Rotenturm Pass.

**Negombo**. Coast town of Ceylon. It is on the W. coast, 23 m. N. of Colombo, with which it is connected by the coast rly. and canal. It stands in a fertile area planted with coconut palms. There is a fishing industry, and a trade in cinnamon. The Dutch House dating from 1682 is notable. Pop. (1953) 38,739.

**Negotiable Instrument**. In English law, a document by delivery of which the legal right to the property which it secures may be conveyed. The distinction is between negotiability and assignability. All contracts, except for

personal services and the like, and all property, can be assigned or transferred, but the person who receives them takes no better title than the assignor had; and, further, takes subject to equities and rights as between the transferor and the debtor.

If A draws a bill of exchange, which is a negotiable instrument, in favour of B, and B negotiates it to C, C can sue A for the full amount of the bill, without regard to any claim which A may have against B. Again, if a negotiable instrument is lost or stolen, and is negotiated to A, who takes it in good faith and for value, A has a good title to it. Instruments are negotiable by the custom of merchants, and any instrument may be made negotiable by universal usage. Bills of exchange, promissory notes, and cheques are the most usual negotiable instruments; but bonds to bearer, dividend coupons, bills of lading, dock warrants, wharfingers' certificates, have by statute and custom acquired most of the incidents of negotiability. See Bill of Exchange.

**Negretti**, ENRICO ANGELO LUDOVICO (1817-79). Italian-born British optician. A native of Como, he settled in London in 1829, became a glass-blower, and began business as a maker of thermometers in 1843. With his partner, Joseph Warren Zambra (*q.v.*), he gained a high reputation for optical and scientific instruments at the great exhibition of 1851, thus founding a business which acquired world-wide celebrity. An ardent Italian patriot, Negretti helped the many refugees in England, and extended hospitality to Garibaldi both in his dark days and during the time of his prosperity. He was naturalised in 1862, and died at Cricklewood, Sept. 24, 1879.

**Negri**, ADA (1870-1945). Italian poet. Born at Lodi, Milan, she became a teacher; and in 1896 married an industrialist, Giovanni Garlanda. She won immediate recognition with a volume of poems, *Fatalità*, 1892; later volumes included *Tempeste*, 1895, and *Maternità*, 1904. She also published books of short stories; *e.g.* *Le Solitarie*, 1917; *Finestre Albe*, 1923. Much of her work was translated into English and other languages. She died at Milan, Jan. 11, 1945.

**Negrin** LOPEZ, JUAN (1887-1956). Spanish scientist and politician. Born at Tenerife, he studied science and medicine at Kiel and other German universities. For a

time he lived in Russia, whence he was driven by the Bolshevik revolution in 1917. He returned to Spain and was appointed professor



Juan Negrin,  
Spanish politician

of physiology and biology at Madrid University, and director of the Spanish physiological institute. In politics a moderate Socialist, he was minister of finance in the government of Largo Caballero, 1936-37, against which

Franco launched his rebellion. On Caballero's resignation, Negrin became premier, May 15, 1937. In Nov., 1938 he transferred the government to Barcelona. On Franco's victory, Negrin with his government fled to France, March, 1939, and in 1940 he went to Mexico. He retained the premiership of the Spanish shadow government until Aug., 1945, when he resigned. He died in Paris, Nov. 14, 1956.

**Negri Sembilan**. Territory of Malaya, alternatively spelt Nigri Sembilan (*q.v.*).

**Negrito** OR **NEGRILLO**. Peoples of very small stature, the first term referring to those of S.E. Asia, the second to those of tropical Africa. The Andamanese males average 58.5 ins. in height, have black curly hair, sometimes with a reddish tinge, bronze to black skin, broad head, broad face, lips full but not everted, and non-projecting jaws. The Semang of Malaya are similar, but with longer heads, and so are the Aeta of the Philippines and the Tapiro of New Guinea. Some of these characteristics occur among peoples in India, S.E. Asia, Indonesia, and Melanesia, and appear to be heritages from ancient elements in their stocks. Survivors of these ancient groups linger on in warm, wet forest regions.

Batwa and Bambuti of the Belgian Congo, Babongo of French Equatorial Africa, and a few other groups in the Cameroons average from 53.5 to 55.5 ins. in height, with trunk and legs relatively short and arms long, hair often in "peppercorn" curls, dark rusty in colour, skin often yellowish-brown, but sometimes very dark, nose broad and eyes protuberant. Cephalic index varies considerably within these groups. They are for the most part jungle-hunters and collectors, using snares and poisoned arrows.

## THE NEGRO AND HIS CHARACTERISTICS

H. J. Fleure, F.R.S., F.S.A., D.Sc., M.A.

*The physical features, customs, and distribution of the Negro in his land of origin, Africa, are here described. Some account of his position in the Americas follows*

Dark skin and black kinky hair are general features of the indigenous peoples of Africa S. of the Sahara and Abyssinia, whence the name Negro (Lat. *niger*, black). These features also occur among some peoples of Malaya, the Andaman Is., Indonesia, Papua, and Melanesia, who are sometimes called Oceanic negroes. Dark skin in Africa is due to melanin grains in the skin, a pigment valuable in stopping excessive short wave radiation (violet and ultra-violet rays) from penetrating the skin and causing skin diseases. The tropic of Cancer runs through the Sahara, and a few degrees S. of this, near the Senegal river, in N. Nigeria, near Lake Chad, and in the Sudan there live the darkest skinned Africans, matched only, elsewhere, in Angola, a very dry area on the tropic of Capricorn.

Among the rain forests of W. Africa and the Congo, cloud and rain limit ultra-violet rays for a good part of the time, but the intense, moist heat is trying. Sweat glands and skin blood vessels are numerous and large, promoting evaporation when it becomes possible. The large sebaceous glands keep the skin supple. Pores of sweat glands and of hairs are large and loose, promoting evaporation, and the looseness of hair pores makes hair growth so irregular that the hair on exposure bends irregularly, *i.e.* is kinky. Everted lips and broadly open nostrils further promote evaporation. Blood colouring combines with the dark melanin grains, and together they often give a chocolate brown tint. E. Africans vary, as is to be expected along a main line of migration, but rarely show the great development of skin blood vessels. In S. Africa a more golden brown is common.

### Colour of Skin

Skin-darkening is one of a group of specialisations among peoples spreading S. from the Saharan region, a response to environmental conditions. Such specialisations are typically irreversible, so that the dark skin does not become white in a cool climate, nor white skin dark in a dry, hot one. Both are specialisations from an original, probably not very dark, brown. Drifts of hunter-collectors of the Old Stone Age can be traced archaeologically from the W. Sahara

and the Nile southward through E. Africa, and this mode of life still persists among pigmies of the equatorial forest and bushmen of the arid S.W. Both have yellow-brown grey skin and are short, pigmies much shorter than bushmen. They live in small groups with little distinction of rank, and the groups are said to fluctuate with the luck in hunting. Some bushmen have become hangers-on around European settlements. Among hunter-collectors able-bodied men hunt, while women, old men, and children collect.

### Crops and Customs

Cultivation spread through Africa from the Nile valley, but only with difficulty and limitations. Millets were tolerant and adaptable, and have become the traditional food plants, but wheat and barley would not respond to native African methods. A few poor varieties of beans and yams may have been native, and the banana is an ancient introduction into the hot, wet regions, probably from Asia. Grasses grow rank and coarse, poor in vitamin C and phosphates, and farm animals are correspondingly poor in quality, as well as subject to attacks of many parasites, among which tsetse and ticks are widespread, especially in regions where the climate is wet. Milk supply is correspondingly poor, and the cattle are not used for ploughing save under the leadership of recent immigrants (some Islamic peoples in Nigeria, Europeans elsewhere). Farming is therefore of low grade, and care of the soil is almost unknown.

Individual or family property in land is unknown in purely native modes of living: the land belongs to the group, a heritage from ancestors to be passed on down the generations. The group's claim to land may be emphasised by burials on the limits of the area claimed. The spirits of ancestors therefore enter into African belief and ceremonial life. Spiritual power is also believed to reside in certain objects called fetishes, and in persons whom Europeans call witch-doctors who may or may not be connected with the custody and care of the fetish. Crude analogies promote hopes and fears attended by fanciful practices that make up the ceremonial life of the African peoples, as of all others.

The witch-doctor or a war-leader may be considered a chief of a village or of a mobile group of herdsmen, or, especially in the N., of a group of villages, and, under influence of Islamic and other outside elements, the chief may be magnified into a king with supernatural powers, and with the custody of the land of the group and the granting of the right-of-user in that land to the families concerned. The king may himself be subject to ritual restrictions, usually fancies gathering around the central idea of maintaining the spiritual power of the king.

Especially in W. Africa, where many conqueror-groups rule over lowlier folk, secret societies are a great feature and may have much influence. Elders of the village may form a council and daughter villages may remain in association with the mother settlement and in this way grade into states or kingdoms such as Dahomey and Ashanti in the W., the Congo in Central Africa, and Uganda in the E. Leaders of herder groups have at times founded empires of short duration, Chaka in S. Africa being the best known of such leaders.

The pop. of Africa is the mixed result of many drifts from the N., with survivals of the older drifts in the hot, wet forest and the arid S.W. It is usually moderately long-headed, and broad heads are rare save among some forest pigmies whose heads are relatively broad because they are so short. But there are marked contrasts. The forest negro, especially in the W., is long armed and short legged, the men of Sudan have extremely long, thin legs. The drifts into negro Africa from the Old Stone Age onwards show a gap in the sequence, and negro Africa seems to have had no Bronze Age. Iron working spread in a crude fashion, often with stranger- or wandering-smiths. The spread of Islam in N. Africa seems to have brought pressure on negro Africa.

After the discovery of America the introduction of maize, manioc, and other food plants would have permitted a rise in standards of living but for the disorganization which followed the vast increase of the slave-trade. In the late 19th century European powers forced upon Africans the need to adjust themselves quickly to a commercial world, and in some parts European settlers claimed the best lands for themselves.

The forest man builds timber houses, often close set and rectangular, with a large guard room



XXIVth and XXVth dynasties; the Greeks identified her with Athene.

**Neiva.** Town of Colombia, S. America, capital of the dept. of Huila. It stands on the Magdalena at the head of navigation for light craft, 217 m. by river S.W. of Bogotá. A cattle-exporting centre it is reached from Girardot by train, car, or aeroplane. Founded in 1550 by Jesuits, it was destroyed by Indians in 1569, and rebuilt in 1612. Pop. (est.) 84,000.

**Nejd.** State of Saudi Arabia. Although in theory Nejd is an independent state, it is in effect united with the Hejaz (*q.v.*), since the Sultan of Nejd is also king of the Hejaz. Nejd is situated on the E. side of the Hejaz, and its capital is Riyadh, on the pilgrim road from the Persian Gulf to Mecca. See Arabia.

**Nell, LITTLE.** Character in Dickens's novel *The Old Curiosity Shop*. A child of 13 at the time of the story, Nelly Trent kept house for her old and failing grandfather. The account of their flight together, their wandering from place to place, the self-sacrificing love the child shows for the old man, the development of a wisdom far beyond her years in her care of him, and her final death in a country village, was for more than a generation considered one of the most moving passages in fiction. Later readers have found it over-sentimental. Dickens has recorded that after "killing" Little Nell he tramped the London streets all night unable to sleep.

**Nellore.** District and town of Andhra state, India. The dist. extends along the Coromandel coast on both sides of the mouth of the Penner for 140 m., and includes a coast strip some 50 m. wide. Rainfall averages 35 ins. annually, but is uncertain, and irrigation is necessary. The chief crops are Indian food grains and rice. Mica is mined at Gudur, Rapur, etc., in the S. of the dist. The capital is a small town on the Penner where it is bridged by the Madras-Calcutta main rly. It is joined to Madras by the Buckingham Canal. Area, 7,942 sq. m. Pop. (1951) dist., 1,795,632; town, 81,480.

**Nelson.** River of Canada. It carries the waters of Lake Winnipeg in a N.E. direction into Hudson Bay after a course of 360 m. Its main tributary is the Burntwood. Because of lakes and rapids the Nelson is navigable for only short distances. At its mouth stands Port Nelson. The name is sometimes applied also to the

stream which flows into Lake Winnipeg, and is correctly called the Saskatchewan (*q.v.*).

**Nelson.** Borough of Lancashire, England. It is 3 m. N. of Burnley and 30 m. N. of Manchester. The industries include cotton, surgical dressing, and confectionery factories, and engineering works. The chief buildings are the town hall, market hall, and grammar and technical schools. There are several public parks and recreation grounds. Of modern growth. Nelson was made a borough in 1890. Nelson and Colne is the name of a borough constituency. Market day, Fri. Pop. (1951) 34,384.

**Nelson.** City of British Columbia, Canada. It stands on the W. arm of Kootenay Lake, 1,100 m. W. of Winnipeg, and is served by the C.P.R. and C.N.R., also by lake and river steamers. The capital of the Kootenay district, it is a centre for mining, lumbering, mixed farming, and fruit growing. Here are railway shops, sawmills, and works for making jam, cigars, etc. The buildings include a court house. Nelson dates from 1886, when a silver mine was opened in the neighbourhood. Pop. (1951) 6,772.

**Nelson.** City of New Zealand. Situated on Tasman Bay, an indentation on the N. coast of S. Island, it is the chief town of Nelson dist. The surrounding country is mainly pastoral. Communication with the other large towns is by coasting steamer; a rly. runs S.W. to the Marine mts. The first settlement was made at Nelson by the New Zealand company in 1841.

The 1951 population was 16,824.

**Nelson.** Former British battleship. Laid down in 1924 and completed in 1927, she was originally designed as one of the 48,000-ton battle cruisers ordered in 1921 and cancelled under the Washington treaty. Displacing 33,950 tons on a length of 660 ft. and a beam of 106 ft., she was driven by geared turbines developing 45,000 h.p., maximum speed 23 knots. She mounted a main armament of nine 16-in. guns grouped in three triple turrets; she and her sister ship Rodney were the first British warships to carry 16-in. guns, while her twelve 6-in. guns were the first weapons of this calibre to

be power-operated. Protected by 16-in. armour over the guns and magazines, the Nelson was manned by 1,640 officers and men.

One of the strongest units of the Home Fleet, the Nelson was mined in a Scottish loch early in the Second Great War; after repairs she engaged in protecting convoys round the Cape. In Sept., 1941, she was torpedoed by enemy aircraft while escorting a Malta convoy. Sent to Gibraltar for temporary repairs, she returned to Rosyth with survivors from the aircraft carrier Ark Royal. She formed part of the fleet supporting the N. Africa landings and covering the invasion of Sicily. The conference between Gen. Eisenhower and Badoglio, resulting in the Italian surrender, took place on board. Damaged by a mine while supporting the Normandy landings the Nelson was repaired and joined the E. Indies fleet in 1945; the Japanese surrender at Penang was signed on board. She was used as a target for bombing practice before being scrapped in 1949.

**Nelson, EARL.** British title borne by the family of Nelson since 1805. Horatio Nelson's barony, and also his title of duke of Bronte, passed on his death to his brother, the Rev. William Nelson, who, in recognition of Horatio's services, was made Viscount Merton of



Nelson, New Zealand. Looking inland from the N.W. towards the residential quarter of the town

Trafalgar and Earl Nelson in 1805. He left no sons, and the titles passed to Thomas Bolton, a son of the admiral's sister, who took the name of Nelson and became 2nd earl. The Trafalgar Estates Act, 1946, terminated the pension payable to Earl Nelson from the death of Thomas Horatio (1857-1947), 4th earl, or his brother Edward (1860-1951), 5th earl, whichever was the later. Holders of the earldom had received a total of £700,000 up to 1946. Albert (1890-1957), 6th earl from 1951, was succeeded by his brother Henry. An eldest son is called Viscount Merton of Trafalgar, abbreviated to Viscount Trafalgar.

## HORATIO, VISCOUNT NELSON

H. W. Wilson, Author of *Nelson and His Times*

*See in addition the articles on Nelson's battles, e.g. Nile; Trafalgar; also those on his contemporaries, St. Vincent; Collingwood; and other seamen. See also Bronte; Royal Navy; Sea Power; Victory*

Horatio Nelson was born Sept. 29, 1758, the sixth child of Edmund Nelson, rector of Burnham Thorpe, Norfolk; his mother was a grand-niece of Sir Robert Walpole, and her brother, his uncle, an officer in the navy. He entered the navy in 1770 as "captain's servant" in his uncle's ship, served in the West Indies, in an Arctic expedition, and in the East Indies. He became captain in 1779; commanded the naval contingent in an unsuccessful expedition against the Spanish fort at San Juan de Nicaragua, 1780; joined Lord Hood's fleet at New York, 1782, when Hood sent Prince William, afterwards William IV, to him for information on tactics; and was employed in the West Indies, 1784-87.

In 1787 Nelson married Frances Herbert Nisbet, a widow of 26 with one son. He commanded the *Agamemnon* in the Mediterranean fleet, in 1793, under Hood; was largely responsible for the capture of Bastia and Calvi in Corsica, in 1794, when he lost the sight of his right eye by a wound; he displayed great gallantry in the action of March 13-14, 1795, with the French fleet, and was bold enough to remonstrate with his admiral (Hotham) on the feebleness which that officer displayed. He blockaded the Italian coast, and attempted to cut Napoleon's communications during the campaign of 1796. When Jervis, later Lord St. Vincent, took command of the fleet and decided to withdraw from the Mediterranean, Nelson was charged with the evacuation of Elba narrowly escaping capture by the Spaniards on his retreat.

### St. Vincent and Abukir Bay

Present at the battle of St. Vincent, Feb. 14, 1797, he secured important results by turning out of the line—contrary to orders and on his own initiative—to attack a part of the Spanish fleet which had been cut off. Of four Spanish ships taken two surrendered to him. In Feb., 1797, he became a rear-admiral, and was knighted. On July 25, 1797, he failed in a night attack on Santa Cruz, Tenerife, and his right arm, shattered by grape, had to be amputated. After some months at home, he rejoined St. Vincent's fleet, and was sent in command of a small detached squadron to watch Toulon, whence Napoleon, with 13 ships of the line under Brueys, was about

to sail for Egypt. In May, 1798, Brueys put to sea, Nelson's squadron having been damaged by a storm. Nelson was joined by reinforcements, bringing his strength up to 14 ships of the line, and hurried in pursuit. After a long search he found and destroyed the French fleet in Abukir Bay, Aug. 1, 1798. Nelson, who had entered the battle with the words, "A peerage or Westminster Abbey," was badly wounded in the head. He was made Baron Nelson of the Nile, and given a pension of £2,000.

In Sept., 1798, he went to Naples, which was under special British protection, was effusively welcomed by Lady Hamilton, wife of the British minister there, and conveyed the king and court to Palermo, when the French took Naples in 1799. On the recovery of the city he was responsible for the execution of Caracciolo (*q.v.*). Created duke of Bronte by Ferdinand I of Naples, 1799, in 1800, he returned home with Lady Hamilton, who now, as he said, became his "wife in the sight of God," and by whom a daughter, Horatia, his only child, was born to him about Jan. 31, 1801.

### Copenhagen

Sent under Sir Hyde Parker to attack Copenhagen, he commanded the squadron of 12 ships of the line, which on April 2, 1801, engaged the Danish forts and ships. The battle was fierce; at one of the most critical moments Parker, from a distance, imperilled success by making a signal of recall. Nelson put his telescope to his blind eye and fought on. Having beaten down the Danish fire and disabled many of the Danish ships he secured an armistice which gave the British all they required. For his victory he was made a viscount.

After a few weeks in England he was appointed to command the British small craft in the Channel, watching Napoleon's invasion flotilla. On Aug. 15 he directed a boat attack on the Boulogne flotilla which failed completely, with heavy loss. In Oct., 1801, as peace was imminent, he was allowed leave and went to Merton Place, Surrey, which Lady Hamilton had bought for him. Here he lived with the Hamiltons.

On May 18, 1803, on the renewal of war with France, Nelson hoisted his flag in the *Victory*, to command the Mediterranean fleet, and a few weeks later began his watch of

Toulon. He did not blockade, but cruised far out, and there were fears that the French might escape without his knowledge. In 1804 Spain joined France, and his work became more difficult. He showed great patience and determination, and, possibly as the result of a promise to Lady Hamilton, never quitted his ship. The French fleet under Villeneuve put to sea in Jan., 1805. The moment he knew, Nelson proceeded first to Sicily, which he had special orders to cover, and then to Egypt in chase. The French, however, had returned to port. "My heart is almost broke," he said of his failure to bring them to battle. In March they came out again, and, joined by one French and six Spanish ships from Cadiz, which brought their force up to 18, sailed for the West Indies.

### "The Nelson Touch"

Nelson, not knowing the direction of their movement, and so short of cruisers that he could not watch them properly, waited for definite news in a position that covered Sicily and Egypt. When information came he followed to the West Indies, rightly concluding that his business was to watch not a particular sea, but the French fleet usually stationed in it. He had with him only 10 ships of the line. He reached Barbados in June, received information which made him conclude that the French were returning to Europe, and followed them once more without delay, sending a small vessel in advance to England. She sighted the enemy on her passage, and thus the admiralty could make its plans. Nelson arrived in Europe ahead of the enemy.

The enemy had actually been encountered by Calder with 15 British battleships off Ferrol with indecisive result, and had turned south to Cadiz. Nelson, after a last visit to England and Merton, went on board at Portsmouth, where the people greeted him with tears of gratitude and love. Off Cadiz he joined Collingwood, and discussed what he called "the Nelson touch"—his plan of battle. He asked the admiralty for a strong force because, as he said, "it is only numbers which can annihilate." The enemy fleet was ordered by Napoleon to put to sea, and on Oct. 21 was fought the battle of Trafalgar.

Nelson drove the *Victory* into the enemy and was engaged by several ships. Conspicuous in his orders, he was mortally wounded by a marksman's bullet and carried below. As he lay dying, he said that he left Lady Hamilton and Horatia "as a legacy to my country." His flag-captain, Hardy, took



a touching leave of him, and, hearing that a great and decisive victory had been won, he died at 4.30 p.m. Nelson was given a state funeral and buried in S. Paul's, Jan. 9, 1806.

On Nov. 20, 1805, his brother, the Rev. William Nelson, was created Earl Nelson of Trafalgar and granted £108,000 to purchase an estate, and a pension of £5,000 a year (see Nelson, Earl). Lady Nelson received a pension of £2,000 a year. Lady Hamilton was ignored. Horatia, his daughter, died in 1881, leaving many descendants of the family of Nelson-Ward.

Nelson's decision, energy, knowledge, personal magnetism, affection for his subordinates, sympathy with his seamen, and magnificent valour made him one of the supreme leaders of men. He always aimed at decisive victory. His method of gaining it was based on a close study of tactics, in which he had excelled since 1782. He framed his plans with great originality and care, and saw that his officers thoroughly understood them, with the result that in his battles they always acted with energy and without hesitation.

**Bibliography.** Dispatches and Letters, N. H. Nicolas, 7 vols., 1844-46; Memoirs, T. J. Pettigrew, 2 vols., 1849; Hamilton and Nelson Papers, Morrison Collection, 2 vols., 1893-94; Letters to Lady Hamilton, D. Sladen, 1905; Campaign of Trafalgar, J. S. Corbett, 1910; Lives, A. T. Mahan, rev. ed. 1899; R. Southey, 1813, Everyman's Library, 1908; C. S. Forester, 1929; C. Wilkinson, 1931; C. Oman, 1947; Poseidon: a Personal Study, R. Capes, 1947.

**Nelson, THOMAS, AND SONS.** British publishing and printing house. Its founder, Thomas Nelson (1780-1861), was born near Stirling, son of a farmer. He started business in Edinburgh in 1798, after experience in London, and when his two sons, William (1816-87) and Thomas (1822-92), were taken into partnership progress was rapid. Thomas invented a rotary press (1850), and other devices affecting bookbinding, photozincography, stereotyping, etc. From the publication of cheap religious works the firm went on to issue juvenile literature, gift books, Royal Readers, and other educational works. The London house was established in 1844. The third Thomas Nelson, a grandson, was killed in the First Great War, and was succeeded as director by his brother Ian, who had as co-director for several years the novelist John Buchan, later 1st Lord Tweedsmuir (q.v.). The firm re-

tains its reputation for juvenile and educational works and for its cheap reprints of good books.

**Neman.** See Niemen.

**Nematoda** OR NEMATHELMINTHES. The round worms, a group of acoelomate animals with elongated spindle-shaped bodies. Some genera are abundant in the soil, some in fresh water, and others in the sea, but the best-known forms are internal parasites of animals and plants. These last usually have a complex life history associated with the need to pass from host to host. Well-known examples are *Ascaris*, species of which occur commonly in man, the horse, and the pig; *Ankylostoma*; and *Filaria*. See Ankylostomiasis; *Ascaris*; Filariasis.

**Nemea.** Valley in Argolis, ancient Greece. Here Hercules was said to have killed the Nemean lion, and here, in the precincts of a temple to Zeus, were celebrated every two years the Nemean games, one of the four great athletic festivals of Greece. See Ludi.

**Nemertea** (Gr. *Nemertes*, the sea-nymph daughter of Nereus). In zoology, a class of flat worms, most of them marine. One or two species occur on land, and a few in fresh water. They are long and ribbon-shaped, without limbs, and vary in size from minute forms to one marine species which is often nearly 100 ft. in length. The most remarkable feature of the Nemerteans is the long, retractile proboscis, forming a tube within the body which can be partly everted and extruded. It is flung out like a lash, which coils round the body of its victim and draws it to the mouth. In some species this proboscis has a spike connected with a poison gland. See Worm.

**Nemesis.** In Greek mythology, daughter of Night and one of the deities of the nether world. She was the goddess of vengeance, punishing the guilty, but at the same time rewarding virtue, and thus became the personification of respect for law and justice.

**Nemi.** Crater lake of Central Italy. It is in the Alban Hills, between Velletri and Albano, 20 m. S.E. of Rome. It is  $3\frac{1}{2}$  m. in circuit, 110 ft. deep, and lies at an alt. of 1,060 ft.; area 70 acres. Of great beauty, it was called the Mirror of Diana, whose temple was in a neighbouring grove. It is still drained by a tunnel excavated by the Romans. Remains of two state barges of Caligula's time were recovered and placed in a museum, but were burnt by the Germans during the Second Great War.

**Nemophila.** Genus of annual herbs of the family Hydrophyllaceae. *N. insignis* was introduced from North America in 1822; it bears conspicuous saucer-shaped blue flowers with white centres.

**Nemours.** Town of France. In the dept. of Seine-et-Marne, it is on the Loing 10 m. S. of Fontainebleau. The chief buildings are the 16th-century church and a castle. Nemours was the chief town of a county, which in 1404 was made a duchy for the king of Navarre. This belonged in turn to the families of Bourbon, Armagnac, and Foix. After the death of Gaston de Foix in 1512, the duchy passed under various rulers until, about 1670, it was given by Louis XIV to his brother Philip, duke of Orléans. The Orléans family held it until the Revolution. Pop. (1954) 5,594.

**Nen** OR NENE. River of England. It rises in the W. of Northamptonshire and flows S.E. to Northampton, where it takes a north-easterly direction past Wellingborough, Thrapston, Oundle, Peterborough, and Wisbech to the Wash, 3 m. below Sutton Bridge. It is 90 m. long.

**Nenagh.** Market town and urb. dist. of Tipperary, Irish Republic. It is on the river Nenagh, 27 m. N.E. of Limerick. The well-preserved castle, built in the reign of John of England, was in 1651 taken by Ireton as Cromwell's deputy. Pop. (1951) 4,410. The river Nenagh, 14 m. long, falls into Lough Derg.

**Nenets** NATIONAL DISTRICT. Part the R.S.F.S.R. It lies within Archangel region, and borders the Barents Sea. Most of its 30,000 people are Nentsy (plur. of Nenets), a Ugro-Finnic group sometimes called Samoyeds. Occupations are reindeer raising, fishing, seal hunting; fluorspar and coal are mined; there are also sawmills and tanneries. Area 67,300 sq. m. The capital of the district is Naryan-Mar, a lumber port on the Pechora river. Some Nentsy also live in Yamal-Nenets national district, Western Siberia, and in Krasnoyarsk territory, Eastern Siberia.

**Nennius.** A Welsh historian. Little is known of him, save that he wrote in Latin a history of the Britons, completed 796. To him are due many of the stories told about King Arthur and the Round Table, but the worth of his work is seriously questioned.

**Nentsy.** See under Nenets.

**Neoarsphenamine.** Another name for the arsenical compound Neosalvarsan (q.v.).



1. As a midshipman, from a painting attributed to T. Gainsborough. 2. As a captain, at the age of 22, after J. F. Rigaud. 3 and 4. Two portraits of Nelson in 1801, as vice-admiral, by Lemuel Abbott. 5. The famous

signal flown from the Victory before the battle of Trafalgar. 6. As vice-admiral, after J. Hoppner. 7. The Death of Nelson in the cockpit of the Victory, Oct. 21, 1805; from the painting by A. W. Devis

# **NELSON: BRITAIN'S NAVAL HERO BEFORE AND AFTER TRAFALGAR**



**Neo-Caesarea**, SYNOD OF. Synod of the Church, held about 315 at a town in Pontus. It passed canons dealing with eccles. discipline, decreeing, *inter alia*, that a priest who married after ordination must be deposed; that no priest might attend a second marriage; and that no one should be ordained under 30 years of age. At a second synod of this name, held about 358, Bishop Eustathius of Sebasté was condemned.

**Neocomian**. In geology, the name given by J. Thurmann to the lowest stage of the Cretaceous system of rocks, usually taken as being synonymous with the Lower Cretaceous. See Cretaceous.

**Neodymium**. One of the rare earth metals. It is so closely associated with praseodymium that until 1885 they were thought to be one element, didymium. Then Welsbach distinguished two separate elements. The precipitated oxalate of neodymium is insoluble in potassium sulphate, as are those of lanthanum, cerium, praseodymium, and samarium. The element, chemical symbol Nd, has an atomic number of 60; atomic weight, 144.27; specific gravity, 6.96; melting point, 840° C.; crystal form, hexagonal, with lattice constants  $a=3.650$  and  $c=5.890$ . Neodymium has been used for giving an amethyst-red colour on porcelain. Didymium salicylate has been tested as a non-irritant antiseptic dressing for wounds. There are a basic sesquioxide,  $Nd_2O_3$ ; a dioxide,  $NdO_2$ ; and possibly a hydrated pentoxide,  $Nd_2O_5 \cdot xH_2O$ . Neodymium forms other salts and may be prepared by fractionation of the double magnesium nitrate. See Rare Earths.

**Neo-Impressionism**. School of painting, an offshoot of Impressionism (*q.v.*). The neo-impressionists carried to extreme limits the analysis of light by the division of colours, *i.e.* the juxtaposition of minute strokes of different primary colours. The movement had a scientific basis, but in the hands of its chief exponents, *e.g.* Seurat, Lucien Pissarro, Signac (*qq.v.*), the limitations of the scientific approach were balanced by a return to a greater sense of artistic design than the Impressionists had allowed to be necessary.

**Neolithic** (Gr. *neos*, recent; *lithos*, stone). Term used to denote the later phase of the prehistoric, Stone Age civilization which preceded the use of metals. It is distinguished from the older

Palaeolithic and Mesolithic phases by the polishing and grinding of its stone tools and weapons, which gives them much greater strength than the chipped flints of earlier ages.

It is not, however, from lithic industries as such that the later Stone Age derives its importance in human history. Kitchen-middens, lake-dwellings, inhabited caves, burial mounds, and megalithic stone monuments, the menhirs and dolmens of W. Europe, show that Neolithic man achieved momentous advances in other directions too. Among these were the inventions of basketry, weaving, and pottery, and, most important, the domestication of animals and plants, which turned men from mere hunters and fishers into herdsmen and farmers. The development of agriculture and the more settled life which it brought was the foundation on which civilization could arise. The more abundant food supply enabled the population to increase and stable communities to develop, among which can be traced the beginnings of stone and timber architecture, navigation, and trade. The dead were treated with respect and provided with tombs, *e.g.* the long barrows of the English countryside; religious beliefs were bound up with the attempt to secure the maximum fertility of animals and crops by coming to terms with the unseen powers of nature.

#### Near Eastern Origin

Neolithic culture seems to have arisen in the Near East, and primitive farmers early made their way into the alluvial lands along the Tigris and Euphrates and in the Nile valley, where conditions made farming easy. Neolithic man was already well established in these regions in the 5th millennium B.C. Seafaring activity is traceable in the Aegean by 4,000 B.C. The Near East now forged ahead in the arts of civilization, while the basic features of Neolithic culture were disseminated through Europe during the 3rd millennium B.C. The Stone Age began to pass from Europe after 1900 B.C., when the manufacture of bronze implements began in Hungary and Bohemia.

Although the Stone Age was succeeded among all the progressive peoples of the Old World by an age of metals, there have survived to modern times in every continent primitive peoples whose culture remained Neolithic even after the existence of metals was learned from external

sources. The New World was peopled in a distant past by bands of Neolithic folk from Asia, who developed through centuries of isolation the cultural elements brought with them. The result was that aboriginal America was still Neolithic when discovered by Europeans. See Stone Age.

**Bibliography** Our Early Ancestors, M. C. Burkitt, 1926; Prehistoric Communities of the British Isles, V. G. Childe, 1947; The Neolithic Cultures of the British Isles, S. Pigott, 1954; Dawn of European Civilization, V. G. Childe, 6th ed., 1957.

**Neon**. Gaseous element; at. no., 10; at. wt., 20.183; density, 0.89990 gm per l. at N.T.P. It is present in the atmosphere in the proportion of about one part in 80,000. It occurs mixed with argon, and was discovered by Sir William Ramsay in 1898 when examining a large quantity of argon. This latter gas was liquefied, and it was found, as the temperature was raised, that a lighter gas than argon was present. To this the name neon ("new") was given. Only two years later could enough of the gas be collected for an extended study. The neon spectrum consists of a great number of red, orange, and yellow lines. Chemical symbol Ne.

**Neon Lighting**. The production of light by the passage of an electric current through a tube containing neon gas is the most common form of luminous tube lighting. At atmospheric pressure all gases are virtually non-conducting. In a tube containing a gas at sub-atmospheric pressure, however, the gas becomes more conductive; and the lower the pressure, the lower the voltage which is required to produce a discharge. Neon gas giving a characteristic red glow needs the lowest voltage per unit length and diameter of tube.

A luminous discharge tube is an evacuated glass tube at both ends of which are electrodes consisting of pieces of metal which are introduced into the tube through a seal. The passage of a current causes electrons to pass between the electrodes with such velocity that they collide with gas particles in the tube. This dislodges positive ions and more electrons. The resulting breaking up of gas molecules by bombardment releases energy which appears as light.

For a tube 20 ft. in length and approximately  $\frac{1}{8}$  in. in diameter, the working voltage for neon gas would be about 3,000 volts A.C. The tube would not start to glow,

however, until about 6,000 or 7,000 volts had been applied. To enable this to be done and to use public electric supply voltages, a special type of transformer is needed; this gives the necessary high voltage on starting, but as soon as the tube lights up the transformer reduces its output pressure to the required figure.

Other gases give different colours, e.g. helium—blue; nitrogen—golden white; carbon dioxide—white; argon—purple; mercury vapour—greenish-blue. Other hues, including daylight effects, are obtained by coating the tube with various fluorescent powders. Alternating current is necessary for all but the smallest lamps, which can operate direct on mains voltage (A.C. or D.C.). Where direct current is supplied for luminous tube lighting, a D.C. to A.C. converter is necessary.

Philip Honey

**Neophyte** (Gr. *neos*, new; *phyein*, to plant). Term applied in the early Christian church to newly baptized converts, as distinguished from the catechumens (*q.v.*). The word is explained by Gregory the Great as meaning "newly planted in the faith." Neophytes wore white garments for eight days after baptism. S. Paul instructs Timothy (1 Tim. 3, v. 6) not to make a neophyte a bishop, but this prohibition was sometimes disregarded in exceptional cases, S. Ambrose being elected bishop of Milan before being baptized, and installed a few days after. The term is also applied to those newly admitted to the priesthood, or to a religious order.

**Neo-Platonism.** System of philosophy which attempted to replace the dualism of mind and matter by monism (*q.v.*), and to solve the problems of virtue and knowledge on a religious basis. Essentially eclectic, it held Pythagorean, Aristotelian, Platonic, Stoic, Christian, Jewish, and other Oriental elements. Three distinct schools of neo-Platonism were: Alexandrian, Syrian, Athenian.

The keynote of the system is supposed direct intercourse with the absolute divine being as the result of ecstatic visions. There are three cosmical principles: the One, absolute unity, which creates by emanation the Logos (word, reason), containing the ideas of things, which in turn produces the Soul, the principle of movement, which represents the ideas in the external world. Individual souls hover between reason and sense, ever striving to free themselves

from the shackles of matter, and to return to the world of ideas, there to be absorbed and lost in God. Although it failed as a popular religion, neo-Platonism left permanent traces, seen in Augustine and Boëthius, in Giordano Bruno, and Jacob Boehme, in Fichte and Schelling, and modern theological speculations such as those of W. R. Inge (*q.v.*). See Philosophy.

**Neoprene.** Form of synthetic rubber, and the first to be commercially successful. Introduced in 1931, it is produced from chlorine, lime, and coke treated in a high-temperature electric furnace. Although neoprene is considerably dearer than natural rubber, it is more resistant to the deteriorating action of sunlight and heat, petrol and lubricating oils, and many chemicals. See Rubber, Synthetic.

**Neoptolemus** or **Pyrrhus**. In Greek legend, son of Achilles. He joined the Greek forces before Troy in the tenth year of the war, a soothsayer having declared that the assistance of Neoptolemus and Philoctētēs was necessary to end the war. Neoptolemus was one of those who were concealed in the Wooden Horse—the strategem which led to the fall of the city. He killed with his own hand Priam, the king, whose daughter, Polyxena, he sacrificed to the shade of Achilles. At the distribution of the spoil, Andromachē, Hector's widow, fell to his lot. He later married Hermionē, daughter of Menelaus, and was slain at Delphi by Orestes, to whom Hermionē had been promised.

**Neo-Pythagoreanism.** An attempt to revive the doctrines of Pythagoras, combined with Peripatetic, Stoic, and Oriental elements, which originated at Alexandria in the 1st century B.C. Its chief representatives were Nigidius Figulus, a friend of Cicero, and Apollonius of Tyana. Many forged treatises were put forward by enthusiasts as genuine works of Pythagoras (*q.v.*).

**Neosalvarsan.** An organic arsenical compound used in the treatment of syphilis. It is a yellow powder containing 19–22 p.c. of arsenic in the trivalent form. Fresh solutions are given by intravenous injection. See Arsphenamine.

**Neosho.** River of the U.S.A. Rising in the east-central part of Kansas, it flows S.E. and S. into Oklahoma, where it turns S.W. by S. to the Arkansas river, near Fort Gibson. Its length is nearly 400 m.

**Neozoic** (Gr. *neos*, new; *zōē*, life). In geology, all the strata

from the Trias to recent times. The word has been used by some geologists as synonymous with the Cainozoic era.

**Nepal.** Independent kingdom of the Indian sub-continent. It lies N. of the plains among the Himalayas, and adjoins Tibet on the N., and Sikkim on the E. Dhaulagiri and Everest are within the state, which is drained by the upper waters of the Gogra, Gandak, and Kosi. The lower slopes are forest covered; the valleys are cultivated for rice, millet, tobacco, and oil seeds. Some of these crops are exported in exchange for cottons and metal goods.

From 1846 the country was ruled by hereditary prime ministers of the Ráná family, the king living in seclusion, until in 1950 a revolution gave the king from 1951 a cabinet of 12 and a parliament. The aboriginal stock is Mongolian, the Gurkhas being predominant; the religion of the great majority is Sanatan, an ancient form of Hinduism. The appointment of the British envoy who resides at the capital, Khatmandu, was in 1934 raised to that of envoy extraordinary and minister plenipotentiary, and a Nepalese representative of the same rank is appointed to the Court of St. James. A narrow-gauge rly. was opened in 1927 connecting Amlekhganj with Raxaul on the Bengal and N.W. rly., 25 m. distant; and in 1940 a second line was constructed from Jayauagar on the frontier to Bijulpura, 33 m. A motor road runs 27 m. from Amlekhganj to Bhimphedi. A topographical survey was carried out in 1927 by Indian personnel of the government of India. The hydro-electric supply system was constructed in 1933. In 1937 the Bank of Nepal was established in Khatmandu and Nepalese currency notes put in circulation.

Relations between Nepal and Great Britain have been friendly since the treaty of Sagauli, Dec., 1815, which ceded the provs. of Garwhal and Kumaon to India. Gurkha troops fought in great numbers during the two Great Wars, not only in their own battalions but also in the ranks of the Assam Rifles, the Assam Regiment, and the Burma Rifles, of which they formed the bulk. Area 54,000 sq. m. Pop. est. 7,000,000. See Gurkha; Khatmandu. Consult Nepal, Land of Mystery, H. Davis, 1942.

**Nepenthes.** Genus of insectivorous plants, commonly known as pitcher-plants (*q.v.*).



**Nepheline.** NEPHELITE, OR ELEOLITE. A member of the feldspathoid group of minerals, consisting of sodium aluminium silicate ( $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$ ). Some potassium is always present in the natural mineral. The feldspathoid group are characterised by a deficiency of silica as compared with the feldspar group (*q.v.*). This deficiency of silica restricts the occurrence of the feldspathoids to igneous rocks low in silica and rich in alkalis. Hence nepheline is found as glassy hexagonal crystals and grains in phonolites, nepheline-basalts, nepheline-syenites, etc. Eleolite is a massive, dark-coloured variety. Nepheline is worked in the U.S.S.R. as a source of aluminium, as that country has poor resources of the richer aluminium deposits (bauxites). Some varieties of nepheline are used as gemstones.

**Nephtin.** Mountain of Ireland. One of the highest summits in co. Mayo, it is situated 10 m. S.W. of Ballina; alt. 2,646 ft. To the W. is Nephtin Beg, alt. 2,065 ft.

**Nephoscope** (Gr. *nephos*, cloud; *skopein*, to observe). In meteorology, an instrument for measuring the motion of clouds. Two types are in general use. Fineman's consists of a horizontal circular mirror and a vertical pointer, carrying a scale, raised or lowered by a rack and pinion. The instrument may be adjusted until the images of the cloud and the pointer are in line with the centre of the mirror. The radius along which the cloud appears to move then gives the direction from which it is coming. In the Besson direct vision method a comb, composed of a number of short upright equidistant spikes, is mounted at its centre on a tall vertical rod. The latter is rotated until the cloud appears to travel along the line of the spikes. The direction is then read off a graduated dial. The movement of the cloud or its image across the spikes or mirror provides a measure of the angular velocity of the cloud, and its linear velocity can then be calculated. See Cloud; Meteorology.

**Nephridium.** Zoological term. It refers to a duct of excretory function in the primitive condition, which is found in a number of animals. In the segmented worms nephridia are a series of metamERICALLY arranged pairs of tubules, each opening to the exterior by a nephridiopore. Internally they either end blindly in a

flame cell (a protonephridium), or project through the coelomic epithelium into the coelomic cavity (metanephridium). They develop independently of the coelom and are to be distinguished from the coelomoduct, primitively a genital duct, which in some animals assumes an excretory function.

**Nephrite** (Gr. *nephros*, kidney). In geology, a variety of amphibole. White to dark green in colour, it is a calcium magnesium ferrous silicate, and has been highly valued as an ornamental stone in all countries and ages. Carved ornaments of nephrite have been found among the remains of primitive man in large numbers in China and Mexico, Switzerland, Germany, France, etc. The word jade is used to describe this mineral and jadeite, as they are extremely similar in appearance. Jadeite, however, is easily fusible, whereas nephrite is infusible. See Jade.

**Nephritis.** Inflammation of the kidney. It may be acute or chronic. Acute nephritis may follow exposure to cold and wet; poisoning by substances which irritate the kidneys, such as cantharides or turpentine; and may occur in the course of scarlet fever, enteric, measles, diphtheria, chicken-pox, and other diseases. It may also be associated with syphilis and tuberculosis. When due to exposure to cold, the onset is abrupt. When occurring in the course of fevers, the symptoms appear more gradually. Shivering fits and rise of temperature, with suppression of urine, may be the first signs. Dropsy occurs early, and may be first observed as a puffiness of the face, or swelling of the ankles.

The patient should be kept in bed, and the kidneys relieved of their functions as much as possible, by stimulating the excretory activities of the skin and bowels. Sweating may be induced by hot air or vapour baths. The bowels should be kept open by saline purges. Pain in the back may be relieved by the application of hot fomentations. Dropsy of the abdomen or of the chest may necessitate removal of some of the fluid by aspiration. See Bright's Disease.

**Nephtys.** Egyptian goddess, perhaps personifying the dusk. The name is the Grecised form of Nebt-het, lady of the house.

She was the wife of Set and sister of Isis, whose lament over the bier of Osiris she shared. Portrayed as a woman crowned by her hieroglyphic symbol—perhaps a house and basket—she was worshipped

at Edfu, Dendera, and elsewhere. See Egypt.

**Nepos,** CORNELIUS. Roman writer of the 1st century B.C. A friend of Cicero, he wrote voluminously on many subjects, but everything has been lost, except a section of a work entitled *Illustris Men*. This is of no value as a contribution to history, but the simplicity of its style has made it a favourite text-book for beginners in Latin.

**Nepotism** (Lat. *nepos*, grandson). Term applied to the practice of showing undue favour to relatives, especially by ministers of state or others exercising patronage. In Church history the term is applied to the abuse of ecclesiastical patronage by popes and bishops.

**Neptune.** In Roman mythology, the god of the sea, identified with the Greek Poseidon (*q.v.*).

**Neptune.** Eighth planet of the solar system, in order of distance from the sun. Its orbit was calculated by Leverrier and by Adams from perturbations in the orbit of Uranus before the planet had been seen. The planet was then found on Sept. 23, 1846, by Galle of Berlin, from particulars supplied by Leverrier. On Oct. 10 Lassell discovered the first satellite, Triton, photographed in 1899 at Pulkova; a second, Nereid, was discovered in 1949.

Neptune can be seen only with the aid of a telescope. It is 2,796,600,000 m. from the sun. Its period of revolution about the sun is 164.78 years. Triton revolves about the planet in a retrograde direction, E. to W., in 5 days 21 hours. Neptune's diameter is 30,900 m., its mass  $17\frac{1}{2}$  times that of the earth, and its mean density 1.61 times that of water; it is thus very similar to Uranus. Its spectrum shows strong bands in the red region identified by Dunham in 1932 as due to methane. Absorption produced by these bands gives the planet its characteristic green colour; a layer of methane 25 m. deep would be needed to produce the observed absorption. The planet shows a small disk with no permanent markings, so no direct evidence of the length of its day can be obtained. Spectroscopic observations suggest a rotation period of about 16 hours, and this is confirmed by the extraordinarily rapid motion of the plane of Triton's orbit, which must be produced by the attraction of an equatorial bulge on Neptune. The rotation is direct, i.e. opposed to that of Triton. See Planet; Sun.

**Neptunium.** Artificial element first obtained in 1940 by bombarding uranium 238 with neutrons; at. no., 93; chemically similar to uranium. Six known isotopes (Np 234 to 239) are all radio-active, with half-lives ranging from 20 hours to  $2\frac{1}{2}$  million years.

**Nereis.** Genus of polychaete (many bristled) sea worms. The body consists of a long series of segments, each bearing numerous chaetae or bristles. They have a definite head with tentacles and four eyes. They live in burrows.

**Nereus.** In Greek mythology, an ocean deity with the gift of prophecy. He was represented as an old man with the tail of a fish or serpent. He had 50 daughters, the Nereids, one of whom was Thetis, the mother of Achilles.

**Nergal.** Babylonian deity, the city god of Kuthah near Babylon, originally a solar deity. As lord of the underworld he was worshipped in temples throughout Mesopotamia; a popular legend told of his installation in the netherworld after his combat with, and subsequent marriage to, the goddess Ereshkigal.

**Neri** (Ital., blacks). One of the two factions into which the nobles of Florence were split in the 14th century. See under Bianchi.

**Neri, PHILIP** (1515-95). Italian priest and saint, founder of the Oratorians. Born at Florence, July 21, 1515, in 1533 he went to Rome and studied theology. He visited the sick, founded a hospital, established in 1548 a Confraternity of the Holy Trinity, and delivered daily addresses which attracted princes and cardinals. Ordained priest in 1551, he began five years later to form a number of young men into the Congregation of the Oratory, an order of priests and laymen observing a common rule, but not under vows, their aim being to teach the ignorant and convert the worldly. Remarkable for cheerfulness as well as piety, he died May 25, 1595, and was canonised in 1622. Consult Life, P. J. Bacci, 1622, Eng. trans. 1902; S. Philip Neri and the Roman Society, L. Ponnelle and L. Bordet, Eng. trans. 1932.

**Nerigissar** OR NERGAL-SHAR-UTSUR (may Nergal protect the king). Name of the fourth king of the Neo-Babylonian dynasty, reigned 559-555 B.C. His invasion of Pirindu, i.e. W. Cilicia, in 557-556 B.C. and his defeat of its king Appuashu is recorded in a chronicle first published in 1956.

**Neritic Deposits** (Gr. *nēritēs*, mussel). In geology, marine de-

posits which have been formed near shore-lines and are largely composed of organic remains, e.g. shelly sands, gravels, coral reefs. They are distinguished from pelagic deposits, which are formed in the deep sea. See Coral; Geology.

**Nernst, WALTER HERMANN** (1864-1941). A German chemist. Born at Briesen, W. Prussia, June 25, 1864, he was educated at Zürich and Berlin universities, and in 1887 was assistant in the Ostwald chemical laboratory, Leipzig. During 1891-94 he was professor of chemistry at Göttingen, and from 1905 held the similar chair at Berlin, where in 1925 he became director of the physics institute. Nernst did fundamental work on reversible galvanic cells and made original contributions in the diffusion, hydration, and dissociation of electrolytes. He established a method of measuring vapour densities at high temperatures, and enunciated the third law of thermo-dynamics. He was awarded the Nobel prize for chemistry in 1920. An incandescent electric glow lamp invented by Nernst was more efficient, though more complicated, than the carbon filament lamp; displaced for general purposes by the metal filament lamp, it is still used in scientific work where concentrated light is required. Nernst died in Berlin, Nov. 18 or 19, 1941. His chief book, *Experimental and Theoretical Applications of Thermo-dynamics to Chemistry*, has an Eng. trans.

**Nero.** Mountain of Yugoslavia, a peak of the Julian Alps (formerly in the Italian region of Venezia Giulia), 7,370 ft. in height, and 7 m. N.E. of Caporetto. The mt. and area about it figured in the battles of the Isonzo between the Austrians and Italians, 1915-17.

**Nero** (37-68). Roman emperor. Originally named Lucius Domitius Ahenobarbus, he was born Dec. 15, 37, and was the stepson of the emperor Claudius, by whom he was adopted in 50, thenceforth bearing the name of Nero. On the death of Claudius in 54, Nero was made emperor. For the five years of his minority the empire was well administered. Then Nero threw aside his tutors and ministers, and for nine years indulged in that orgy of tyranny which has made his name a byword for all time. His tutor Seneca, his mother Agrippina, his wife Octavia, were all done to death; anyone who offended him, or whom he distrusted, was murdered with or without the form of law.

He plunged into licentious dissipations, and shocked all Roman conventions by posing publicly as



Nero,  
Roman emperor

a musician and an artist. In 64 fires broke out in Rome by which half the city was consumed: men whispered that the destruction had been planned by the emperor him-

self. But Nero announced that the things had been done by the obscene sect of the Christians, upon whom a frightful persecution was let loose. Life in Rome became a nightmare; the horror grew till Galba, one of the provincial generals, led his troops upon Rome. In the face of danger the coward emperor fled, and when he heard the tramp of the approaching troops, died by his own hand. 68. Theatrical to the end, his last words were "What an artist is lost in me!" See Agrippina. Consult lives, B. W. Henderson, 1903; A. Weigall, 1930.

**Nertchinsk.** Town of E. Siberia, R.S.F.S.R., in Chita region. It is on the river Shilka, 530 m. E. of Irkutsk, and is served by a branch line of the Trans-Siberian rly. The inhabitants of the district are chiefly occupied in agriculture, cattle rearing, tobacco cultivation, and hunting furred animals. There are coalmines near by.

**Nerva, MARCUS COCCÆUS** (32-98). Roman emperor. A man of eminent respectability, though not of great capacity, he was chosen emperor on the assassination in 96 of Domitian after whose tyranny his mild rule was a welcome relief. Nerva took an oath that he would put no senator to death, suppressed the worst of the informers who had disgraced the latter part of Domitian's reign, and interested himself in public charity. He adopted Trajan and died Jan. 27, 98.

**Nerval, GÉRARD DE.** Adopted name of the French writer, Gérard Labrunie (1808-55). Born in Paris, May 21, 1808, he was the son of a doctor. Taught by his father several languages, he read widely and, of a studious and eccentric nature, he soon began to write. In 1828 he translated



Gérard de Nerval,  
French author



Faust, and volumes of verse and prose appeared until, following an attack of insanity, he committed suicide, Jan. 25, 1855. Nerval's best work is in his fantastic stories, *Contes et Facéties*, 1852, and *Les Filles du Feu*, 1854, though Aurélie has special interest as a record of his own madness. Sylvie, 1848-50, is also noteworthy. He also wrote comedies, a drama, and articles for periodicals. Among his friends were Gautier and Dumas. His complete works, appeared in 1876.

**Nerve.** Cord-like structure composed of nerve fibres, i.e. long branches of nerve cells which convey impulses from one part of the body to another. Nerves which exist in the brain or spinal cord are called efferent nerves, and those which carry impulses from the periphery to nerve centres are known as afferent nerves. If, for example, a painful stimulus is applied to the hand, the impression is conveyed by afferent nerves to the brain, which then sends out an impulse through efferent nerves, which withdraws the hand from the source of pain. See Brain; Ganglion; Neuron.

**Nervo and Knox.** British music hall comedians. James Holloway (who adopted the name Jimmy Nervo) was a Londoner, born Jan. 2, 1898, and Albert Edward Cromwell Knox, born July 12, 1896, came from Newcastle-upon-Tyne. Their knockabout fun became famous from their first appearance as members of the Crazy Gang at the Palladium, London, 1931. They were in a number of royal command performances.

**Nervous System.** System of nerve cells and nerve fibres which control or regulate the actions and functions of every part of the body. The nervous system consists of two main divisions, the cerebro-spinal system, comprising the brain and spinal cord, and the vegetative or autonomic, consisting of the sympathetic nervous system, and certain other ganglia, i.e. aggregations of nerve cells and fibres. The cerebro-spinal system controls the movements of muscles and carries out actions consciously directed by the individual. The autonomic system regulates functions and actions which are not under voluntary control, e.g. the peristaltic movements of the intestine and the processes of digestion. The two systems are, however, not entirely independent.

Diseases of the nervous system may be divided into two main

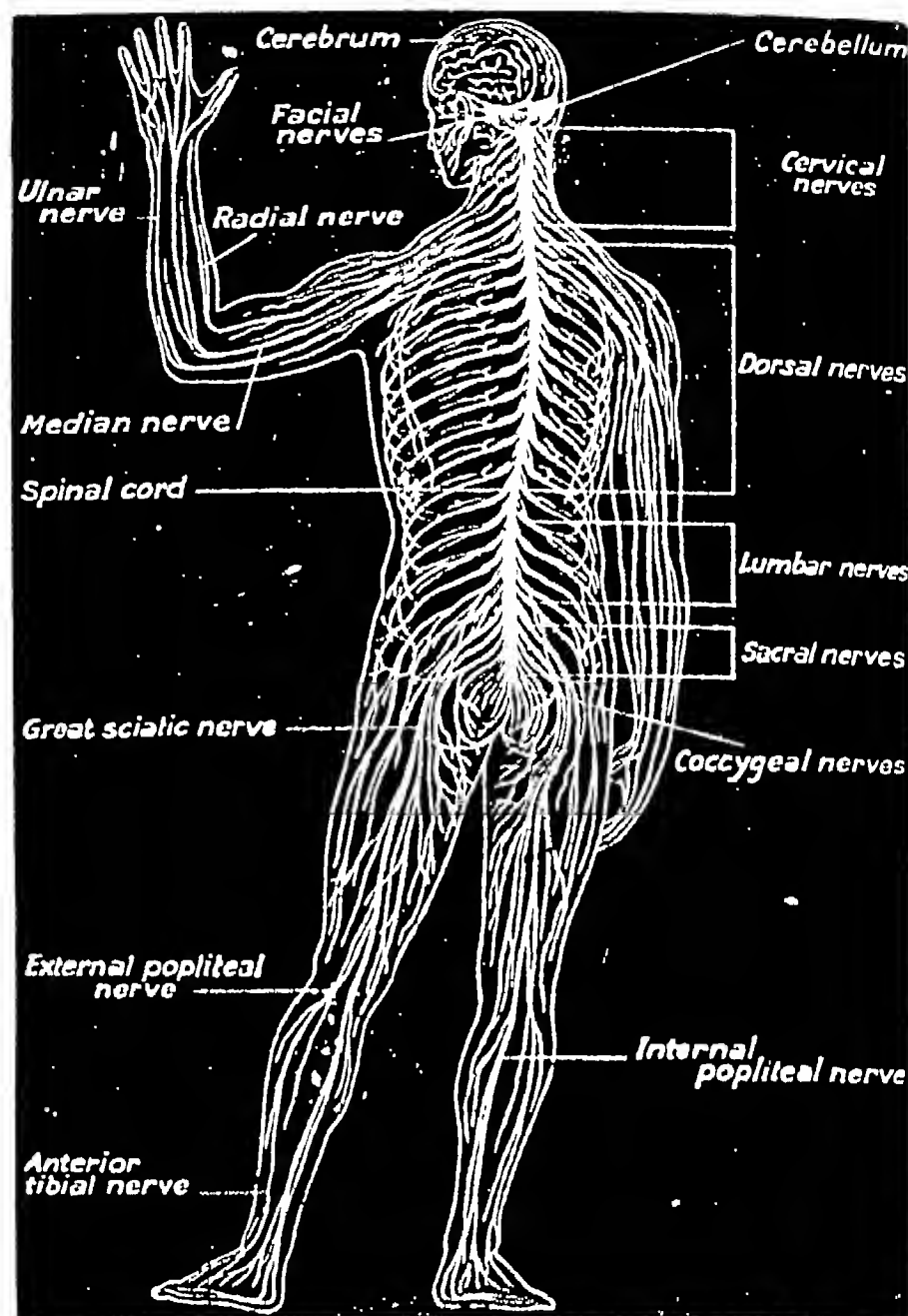
classes: (1) Functional nervous diseases (or more properly disorders), in which no pathological changes in the system can be detected. (2) Organic diseases associated with degeneration in the nerves or nerve cells following injury—for example, a blow on the head, or rupture of an artery in the brain, as in apoplexy; chronic poisoning, as in alcoholic neuritis; effects of micro-organisms, as in diseases of the nervous system due to syphilis; and other causes yet unknown.

Nerves also exercise a nutritive action upon the parts they supply. Thus, when the nerves directly supplying a group of muscles are severed, as for instance by a gun-shot wound, the muscles cease to respond to stimuli, and show marked wasting. When the injury or degenerative process is not in the nerve immediately supplying the part, but is situated

in a higher nerve centre, such as the brain, which controls the lower nerves, then the condition known as spastic paralysis is produced, in which stimuli produce jerky, exaggerated movements, and the muscles are usually less wasted. See Apoplexy; Brain; Disseminated Sclerosis; Ganglion; General Paralysis of the Insane; Hysteria; Infantile Paralysis; Locomotor Ataxia; Meningitis; Motor Nerves; Myelitis; Neuralgia; Neurasthenia; Neuritis; Neurosis; Paralysis: Paraplegia; Spinal Cord. Consult Integrative Action of the Nervous System, Sir C. Sherrington, new ed. 1947.

**Nesbit, EDITH** (1858-1924). British poet, novelist, and writer of children's stories. Born in London and educated in France and Germany, in 1879 she married Hubert Bland (1856-1914), and the two were original and active members of the Fabian society. She published several books of poems and some somewhat sentimental novels, e.g. *Thirteen Ways Home*, 1901, but is chiefly remembered for her many delightful stories for children published regu-

larly between 1899 (*The Would-be-Goods*) and 1913 (*Wet Magic*), especially the series dealing with the Bastable (q.v.) family, and another group of related tales, *Five Children and It*, 1902; *The*



Nervous System. Diagram of the network of nerves in the human body seen from the back

*Phoenix and the Carpet*, 1904; and *The Story of the Amulet*, 1906. Many of her stories were first serialised in the *Strand Magazine*. She died May 4, 1924. Consult *Life*, D. L. Moore, 1933.

**Ness.** Topographical term for a cape. It occurs in place-names on the E. and S. coasts of Great Britain, e.g. Sheerness, Buchan Ness, Dungeness. Like naze, it is akin to nose.

**Ness.** River of Scotland, in the co. of Inverness. It comprises the 7 m. waterway from Loch Ness to Moray Firth, and is noted for its salmon-fishing. Parallel with it is the N. section of the Caledonian Canal. See Inverness.

**Ness, LOCH.** Lake in Inverness-shire, Scotland. It forms a part of the Caledonian Canal, and lies in the valley of Glenmore, receiving the waters of the Oich, Morriston, Foyers, Tarff, and other rivers, while its surplus waters are carried to the Moray Firth by the river Ness. Length 22½ m., average breadth about 1 m., greatest depth 754 ft.

The legend of the Loch Ness monster dates from the summer of

1933, when apparently reliable witnesses, including a local minister, reported that a marine creature—estimated by one observer as 60 ft. long—had appeared in the waters of the loch. It was described as having a small head on a long neck, and a long body with a number of humps; it could swim fast, but mostly remained just below the surface. A watch party in 1934 took photographs which appeared to establish the presence of some large and unfamiliar creature; but its identity remains a mystery.

**Nesselrode, CHARLES ROBERT, COUNT (1780-1862).** Russian diplomatist. Born at Lisbon, Dec. 14,



*Nesselrode*

1780, he was the son of the Russian minister there. Educated partly in Berlin, he spent some time in the navy and army before entering the diplomatic service. He gained experience of un-

rivalled value, and also the friendship of Talleyrand and Metternich, during the European negotiations of which Napoleon was the central figure, 1807-11. He accompanied the Russian army that invaded France in 1814, and at the congress of Vienna was the chief instrument of the tsar Alexander I in pressing for the policy of the Holy Alliance. He was minister for foreign affairs from 1815 until 1856. Although Alexander's successor, Nicholas I, did not always act upon his advice, Nesselrode was the most influential Russian statesman of his day. He died March 23, 1862. His letters and papers were edited by A. de Nesselrode, 1904.

**Nessler's Reagent.** Alkaline solution of mercury and potassium iodide, employed as a test for ammonia, with traces of which it gives a yellow colour, and with larger quantities a brown precipitate. On account of the delicacy of the test it is adopted for detecting ammoniacal impurities in drinking water.

**Nessus.** In Greek mythology, one of the Centaurs. Having attempted to carry off Deianeira, the wife of Hercules, he was shot by the latter with a poisoned arrow. Nessus, when dying, gave Deianeira his infected cloak or shirt, declaring that it would win back the love of her husband should he prove unfaithful. The jealous wife sent Hercules the cloak, which he

put on, and died in fearful agony. Nessus's shirt is proverbial for an intolerable burden. *See Centaur; Deianeira; Hercules.*

**Nest.** Shelter constructed by an animal for the purpose of rearing its young. The nest-making instinct is common to a large part of the animal world. Among mammals most of the rodents construct nests or nursing chambers, those of mice being familiar, and many of the insectivores have the same habit. Many fishes, e.g. the common stickleback, build nests. Among the insects bees, wasps, and ants construct elaborate nests in which to rear their larvae, and many spiders make nests of silk, in which the eggs are deposited and the young kept for a time.

Nest building has attained its highest development among the birds as a class, culminating in the wonderful constructions of the weaver birds and tailor birds. As to some of the gregarious birds, a huge structure is built which contains the individual nests of many pairs.

Generally the most elaborate nests are made by those species

whose young are most helpless in the earlier stages of life. Where, as in the game birds, the young are able to run about and pick up food soon after being hatched, the nest is almost always on the ground and of simple construction. Birds, like finches, which have many enemies take the most pains to conceal their young, either by placing the nest in an inaccessible spot, or by covering the outside with lichens or other material to match its surroundings. *See Bird; Cassiques.*

**Nestor.** In Greek legend, king of Pylos, who in spite of his years took part in the Trojan War, in which his counsel was highly valued. As a young man, he had taken part in several adventures, including the expedition of the Argonauts and the hunt for the Calydonian boar. He was one of the few Greek leaders to reach home safely after the fall of Troy. *See Troy.*

**Nestorianism.** Christian heresy which caused the council of Ephesus in 431 formally to define the dual nature of Christ. It is named after Nestorius, conse-



Nest. Various forms of nest built by common British birds. 1. Coot, floating on water. 2. Redstart, hole in wall or tree. 3. Willow warbler on the ground among bracken. 4. Wild duck, under bushes or hedges. 5. Nightingale, built of dead oak leaves on grass, at the base of bushes. 6. Reed hunting, in small trees growing in swampy ground



crated bishop of Constantinople in 428, who, if he did not originate, formulated in somewhat hazy language the doctrine that the B.V.M. could not be called *Theotokos*, Mother of God, because not God, but only the temple in which God dwelt, was born of Mary. In other words, he appears to have believed that in Jesus Christ there were two Persons and two Natures, that Christ's humanity was but the temple of His divinity, and that God the Son did not endure human suffering or go through human experiences. Nestorius was deposed, excommunicated, and banished to Egypt, where he died in 435. The heresy spread to Syria, Persia, India, Central Asia, and China, and communities in Iraq, Kurdistan, and Malabar, India, preserve the name but not the heresy. See Eutyches; Monophysite; Theodore; consult Nestorians and their Rituals, G. P. Badger, 1852.

**Net.** Openwork fabric of cords or threads which cross each other at right-angles and have comparatively large spaces between them. The threads or cords are knotted at their intersections; in this respect net-making differs from weaving, where the intersecting threads merely cross each other. The open spaces in a net are called meshes, and these correspond in size with the pin, which is a straight piece of wood of oval section used in net-making.

Net-making has been practised from the earliest times. Records of it have been found in the Swiss lake dwellings and in the paintings and sculptures of Assyria, Egypt, Greece, and Rome. The Chinese make fine silk nets, and the Eskimos weave nets from sinews and strips of sealskin. The chief materials now used in nets are hemp, cotton, and flax.

Fishing nets made from cotton are light, easily managed, and extremely buoyant. The majority of nets are made by machinery, the first practical loom having been invented by James Paterson in 1810. Types of fishing nets are the seine, which is thrown from a boat or the shore and then drawn back; the trawl, which is towed from a boat; the drift, which goes with the tide; and the moored net, which is stationary. Nets used in the Mediterranean tunny fishery are nearly a mile long, while those of deep-sea trawlers will bear up to 20 tons of fish.

Fly nets are used to catch birds on the seashore and clap nets for smaller birds. Very fine nets take

butterflies and other insects, and also give protection against mosquitoes. See Lace.

Wire netting, made by machinery in the same way as fabric netting, is used for fencing, and in the First Great War was put down for the surface of military roads across the Sinai desert. A heavier type in the Second Great War provided a landing surface at emergency military airfields. In wartime heavy steel netting, laid and lifted by ships specially designed for the purpose, is placed across harbour entrances and around warships at anchor to prevent torpedo attack. Steel netting, suspended from the sides of ships passing through areas liable to submarine attack, may have prevented 70 p.c. of probable sinkings in 1939-45. Quantities of fabric netting, festooned with coloured cloth, were used for camouflaging men, vehicles, and positions in the war; every British military vehicle carried sufficient netting to cover it while parked. Rope nets were fitted to transports for the rapid disembarking of men into assault craft.

**Net-ball.** Outdoor or indoor game. Although it is generally played by women, it is suitable for



Net-ball. A goal having been missed, a tussle for the ball ensues

either sex or for mixed sides. The pitch, similar in shape to a hockey pitch, usually measures 100 ft. by 50 ft., but may be varied according to the number of participants on either side, generally seven. Around the goals, which are fixed in the centre of the end lines, a semi-circle 16 ft. in radius, called the shooting circle, is drawn, and in the centre of the field a circle 4 ft. in diameter is marked, while the playing pitch is divided

into three courts of equal size by lines drawn transversely to connect with side lines.

The goals are single upright posts, each fitted with an iron ring 15 ins. in diameter, placed horizontally 10 ft. above the ground and projecting 6 ins. from the post. Attached to the ring is a net, open at the bottom, through which the ball has to be passed to score a goal. The ball is an ordinary Association football, 27 to 28 ins. in circumference. The opposing teams at the start of the game, which is played in two periods each of 15 minutes' duration, unless otherwise arranged, line up in the field, the respective positions being goal-scorer, attack, attacking centre, centre, defending centre, defence, and goal-keeper.

The game is begun by one of the two umpires, each of whom controls half the playing field, bouncing the ball in the centre circle, while the opposing centres stand outside the circle with their backs to the side lines. It proceeds when one of the centres succeeds in catching the ball, which is then batted or thrown from one player to another, until it is received by either goal-scorer or attack, standing within the shooting circle, who then attempts to shoot it into the net.

Infringements of the rules, such as offside, two players of one side holding the ball at the same time with both hands, carrying the ball, and the body foul, i.e. obstructing an opponent by interposing the body, are penalised in two ways, the first two by a free pass, and the last two by a free throw at goal, awarded to the side offended against. When the ball passes over either of the side lines, a throw-in is given against the side that caused the ball to leave the field.

In five- and seven-a-side games defending players are adjudged to be offside if they enter the attacking court, and attacking players if they enter the defending court. In nine-a-side games those players who leave their own courts are offside. The rules of the game are governed by the All England Netball Association.

**Netheravon.** Village of Wiltshire, England. Saxon work is seen in the tower of its 13th century church. Situated 4 m. N. of Amesbury on the edge of Salisbury Plain is a R.A.F. station which maintained fighter aircraft in the Second Great War. An infantry weapon school and machine-gun school were established, later known as the Small Arms School.

# THE NETHERLANDS AND ITS HISTORY

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*A description of the physical features, history, and institutions of the Netherlands is followed by a separate account of happenings in that country immediately before and during the Second Great War. See also articles on the towns of Amsterdam; The Hague; Rotterdam, etc.; on the provinces, Friesland; Holland; Zealand, etc.; on famous men of Netherlands history, art, and literature: e.g. Barneveldt; Couperus; Grotius; Vondel; William the Silent; Witt; and the article on Dutch School. See also Indonesia*

The Netherlands is the official name of the kingdom often called Holland. That name properly belongs only to the N.W. of the country, which was the county of Holland in the Middle Ages, the prov. of Holland in the republic of the Seven United Provinces, and

is today organized in two provinces, N. Holland and S. Holland. The importance of this region is such that the Dutch themselves, too, in common parlance mostly extend its name to the whole country, although the words *Nederland*, *Nederlander*, *Nederlands* (the language) are always used in official or scholarly language and by more careful writers or speakers. Historically the name Netherlands, French *Pays-Bas*, Dutch *Nederlanden*, was common to the entire Low Countries, ruled over by Charles V and Philip II in the 16th century and consisting of 17 provinces, covering the area now occupied by the kingdoms of the Netherlands and Belgium and a strip of N. France.

The Netherlands, composed of eleven provinces—Friesland, N. Holland, S. Holland, Zealand, Utrecht, Groningen, Drenthe, Overijssel, Gelderland, N. Brabant, and Limburg—has an area of 13,551 sq. m., or 15,771 including gulfs and bays. It is bounded W. and N. by the North Sea, and on the E. by Germany, and on the S. by Belgium. In the S.E. corner, Limburg runs down between Germany and Belgium, assuming special strategic importance in consequence.

In the S. of Limburg is the highest point (1,050 ft.) in the Netherlands. Other outcrops of older formations occur in the E. provs., also sandy tracts 160–325 ft. high. The rest of the country, about 99 p.c. of the whole, is a comparatively recent alluvial or diluvial deposit, little of it exceeding 16 ft. above sea level, while much is below—some even 6 ft. below—sea level. This fact dominates the Netherlands in all its aspects.

Physically, the country slopes down from E. and S.E. towards the

North Sea in W. and N. The sea would rush in and overwhelm this lower-lying area but for a natural protecting rim of sand-dunes, artificially strengthened. Across this area the rivers flow to the North Sea—Lek (Rhine), Maas (Meuse), Waal, Schelde being the chief—from the higher continent beyond. In the past the sea has often rushed in with devastating effect, of which visible signs are the Dollart, 1277, and the broken coastline of the Frisian, S. Holland, and Zealand islands. The former Zuyder Zee resulted from a sea invasion of 1170. At all times, too, the precarious river levels threaten internal floods.

Faced with unique problems of defence works against the waters, the Netherlands has, throughout

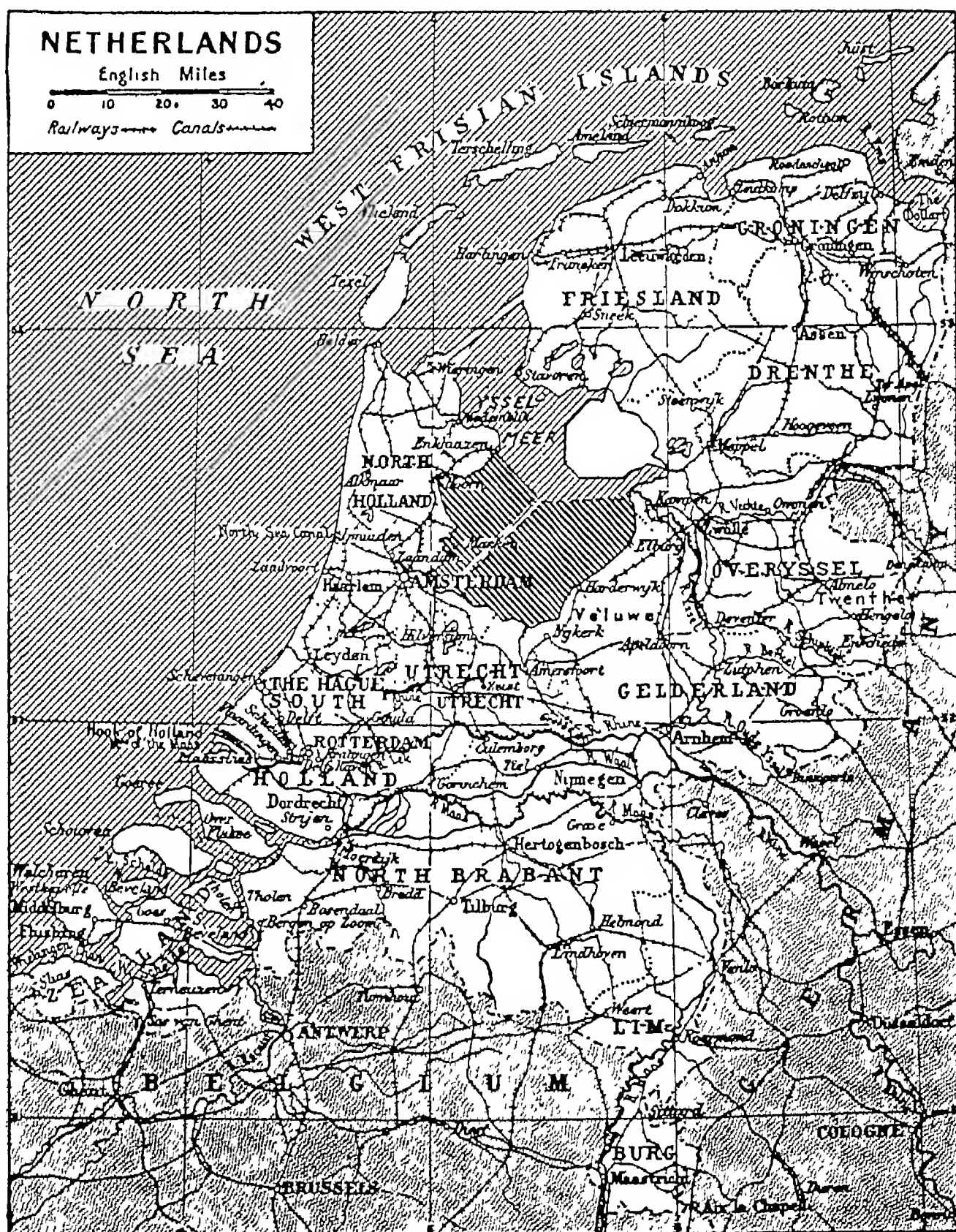
historical times, possessed a unique public department to cope with them, known as *Waterstaat*, or the state of the waters. The works of defence, reclamation, and drainage, directly or indirectly comprehended by the *Waterstaat*, are complicated, and for a great part invisible.

Every indyked area, of whatever size or level, the waters within which are constantly organized and controlled as a unit, is called a polder. Nearly half of the Netherlands is polderland. There are sea-polders and land-polders, and there are also *droogmakerijen*, parts where the lakes or meres formed after excavations of short peat have been drained.

Dutch peat (*turf*) is of two kinds, hard (short) and loose, according as it originates in low or high fen.



Netherlands arms



Netherlands. Map showing the waterways and canals, and the administrative divisions. The heavily shaded area is under reclamation (see text)



Some 20 p.c. of the Netherlands is fen, the greater proportion of it low, in the maritime provinces. Both kinds of peat are everywhere being removed; short peat dredged and dried from the low fens, for example, and loose peat dug off large areas, as in the famous "fen colonies" of Groningen and Drenthe. The place of both is taken by green harvests.

**LAND RECLAMATION.** The map of the country today is very different from that in earlier centuries, for while in places new lakes or meres formed, in others islands have been added to by indykings, and old lakes have been reclaimed. In the first half of the 17th century a number of lakes in N. Holland, of which the Beemster (c. 70 sq. m.) was the largest, were turned into fertile land in the middle of the 19th century the Haarlem Lake, considerably more than twice as extensive as the Beemster. The land there reclaimed, which preserves its curiously artificial appearance, intersected by straight canals and fenced in by high dykes, is inhabited by some 29,000 people.

#### Zuyder Zee Reclamation

The reclamation of the Zuyder Zee, the great 20th century example of this kind of enterprise, was undertaken by the state in 1918. During 1920-24 a dyke was constructed connecting the island of Wieringen with the mainland (1½ m.); during 1927-32 the immensely heavy dyke, nearly 20 m. long, between Wieringen and Friesland, was built; this turned the Zuyder Zee into a lake. By 1930 the smallest of the four large polders to be constructed—an area adjoining the island of Wieringen and slightly larger than the Haarlemmermeer—had been reclaimed. When the Second Great War broke out, the N.E. polder, adjoining the mainland of Friesland, Drenthe, and Overijssel, with an area twice as large as that of the first, was dry, and during the war it began to produce wheat. A less monotonous landscape and more attractive villages have been created than in the Haarlemmermeer. The keen land hunger among the farmers' sons means there is no difficulty in peopling the new lands with an enterprising and skilled pop.

In the last hundred years the Dutch have also reclaimed enormous tracts of waste land, especially in the Veluwe (prov. of Gelderland), in the S. and E. of N. Brabant, in Drenthe, and in the S. of Groningen. Deforestation has accompanied this process in the past, but has now been checked

Early in 1953, a spring tide, 2 ft. above the highest previously recorded, inundated a sixth of Zeeland and a considerable part of South Holland; 3,000,000 people were affected; 50,000 driven from their homes; 1,900 drowned.

**ECONOMIC DEVELOPMENT.** The pop. of the Netherlands grew from slightly over 2½ millions in 1830 to over 9 millions in 1945, an increase promoted during the 20th cent. by excellent sanitary measures—leading to the lowest infant mortality in the world—and by good housing conditions.

Before the Second Great War 38 p.c. of the pop. was employed in industry. Important industrial centres were Twente (E. Overijssel), textiles; Tilburg, textiles; Eindhoven, the great Philips firm making wireless instruments, vacuum cleaners, and other electrical apparatus, which in 1935 constituted 8 p.c. of Dutch exports; Limburg, coal mining; 20 p.c. of the pop. is engaged in agriculture (in 1900, 30 p.c.).

The Netherlands is far from self-supporting in foodstuffs, especially grain. Holdings are generally small, cultivation is intensive and on a high technical level. Important for exports are dairy produce, especially from Friesland and N. and S. Holland, fruit, vegetables, and flowers, e.g. from the Westland (S. of The Hague) and the region between Haarlem and Leyden.

In the 1930s exports were 65 p.c. of imports, the difference being made good by shipping and trading and by investments abroad. Dutch economy, based on expert and technical skill and on international relations, was highly vulnerable and subject to international fluctuations, and in 1939 the number of unemployed rose to 500,000.

#### Post-war Economic Conditions

Damage suffered during the German occupation, 1940-45, as a result of deliberate destruction and plunder, was estimated at 11·4 milliards of guilders, i.e. 32·6 p.c. of the pre-war national wealth. The post-war economic situation was serious. Export to Germany, before the war the principal market for vegetables and dairy produce, had virtually ceased. The troubles in Indonesia, from which before the war 14 p.c. of the national income was derived, were another drag on recovery. A large part of investments abroad had been lost.

Drastic monetary measures in 1945 prevented inflation; a careful system of rationing of food and textiles (ended in 1949).

respected by the Dutch with comparatively little evasion, reduced inequalities between citizens.

Closer economic cooperation with Belgium and Luxemburg (*see* Benelux); the dollars the Netherlands received from 1948 under Marshall aid (*see* European Recovery Programme); and the end of war in Indonesia (*q.v.*) were factors in her steadily improving situation: in 1946 only 37 p.c. of imports were covered by exports; by 1956 this figure had risen to more than 75 p.c.

**PEOPLE, LANGUAGE, LITERATURE.** This strange and relatively new country holds a pop. of (est.) 9,295,304. It is densest in N. and S. Holland, where are the largest cities. Netherlands are, in the main, Frisian, Saxon, and Frank, much intermingled, but still clearly showing the several types. Frisians, solid in Friesland, have mixed with Franks in the W. maritime provinces, and in a less degree with Saxons in Groningen; otherwise, broadly, the S., W., and centre are Frankish, the E. Saxon. All three have a language in common, within which dialects vary. A distinct Teutonic tongue, it stands between English and German. Frisian, also a distinct Teutonic tongue, has a literature of its own, though it is spoken only in the countryside of Friesland.

#### Dutch and Flemish

The Dutch language (*Nederlands*) extends over the N. half of Belgium, where it is commonly called Flemish, although *Nederlands* is there, too, the official description. In the Middle Ages and 16th century the active centres of Netherlands civilization and literature were to be found there, in Ghent, Brussels, Antwerp, etc. It was only after the split brought about by the war of independence against Spain that the lead was transferred to the N. Many Flemish refugees from the provinces reconquered by Spain took an important part in the outburst of intellectual and artistic activity characteristic of the first century of Dutch independence.

As in painting, so in letters, the 17th century was the golden age of the Netherlands, with the historian Pieter Corneliszoon Hooft (1581-1647), the comic playwright Gerbrand Adriaanszoon Brederoo (1585-1618), and the great Joost van den Vondel (1587-1679) as its shining figures; besides whom stands the homely fabulist, Jacob Cats (1577-1660), popularly most influential at home and best known abroad Willem Bilderdijk

(1756-1831) offered determined and impassioned resistance to the spirit of his age; a reactionary in his own day, he was later to be acclaimed the forerunner of the Calvinistic revival. The poets Christiaan Starling (1767-1840), Hendrik Tollens (1780-1856), and Pieter Augustus de Genestet (1803-61) were his contemporaries.

A magazine, *De Gids*, founded early in the 19th century, was an inciting force to a revival of letters; its great figure was Everhard Johannes Potgieter (1808-75), who believed in the resuscitation of the people by the modern liberal spirit as well as by the example of the glorious past. Later on he was assisted by Conrad Busken Huet (1826-86), who tried to raise the level of literature by a merciless comparison with literature abroad. Even more in opposition to the prevailing self-complacent mediocrity was the romantic and revolutionary Eduard Douwes Dekker (*q.v.*, 1820-87).

#### Influence of *Nieuwe Gids*

The *Nieuwe Gids* group—with whom the pioneer of the modern lyric, Jacques Perk (1859-81) was one in spirit—included the poet and critic Willem Kloos (1859-1938), and the pioneer writer of the naturalistic novel, K. J. L. Alberdingk Thijm ("Lodewijk van Deyssel," b. 1864). With its claim for art as the most individual expression of the most individual emotions, it has since inspired many movements and reactions. Albert Verwey (1865-1937), originally a member of the group, became a leader into quite different directions of philosophic reflection and social sense. The brilliant novelist Louis Couperus (1863-1923), the realistic dramatist Herman Heyermans (1864-1924), the idealistic poet Frederik van Eeden (1860-1932), who became an R.C., Herman Gorter (1864-1927), the poet who wrote *Mei*, immortal idyll of Dutch nature, and became a Marxist, the mystical poet P. C. Boutens (1870-1943), and the poetess of socialism and humanitarianism Henriette van der Schalk (b. 1869, married to the painter Roland Holst), were all, diverse as they are, stimulated by the *Nieuwe Gids*.

The movement coincided with a marked economic revival, and the mental activity, absence of which was so bitterly deplored by the great mid-19th century critics, has not since flagged in Holland, and extended into Flemish Belgium, where the priest Guido Gezelle (1830-99) had already written

religious and nature poems, and where now came August Vermeylen (1872-1945), an essayist of great intellectual force; and the great poet, a combination of sensuality and intellectualism, Karel van de Woestijne (1878-1930). Stijn Streuvels (1871-1945) depicted Flemish peasant life in his novels, while Felix Timmermans (1890-1946), the creator of the exuberant *Pallieter*, was enthusiastically read in both Holland and Flanders.

Herman Teirlinck (b. 1872) was a versatile novelist and playwright. In Dutch litera-

peared for the most part under new names. The great organs of the cultivated classes, the *Algemeen Handelsblad* of Amsterdam (conservative liberal), and the *Nieuwe Rotterdamse Courant* (progressive) survived. The Socialist newspaper is *Het Vrije Volk*, the Anti-Revolutionary paper is *Trouw* (formerly *De Standaard*); *De Nieuwe Nederlander* is the organ of progressive, even Socialist, Protestant opinion, while the R.C.s have *De Tijd* and *De Volkskrant*. The majority of readers of Dutch newspapers are postal subscribers, a fact which consolidates the authority of newspapers as organs of political opinion.

Bearing significantly on the literature, art, and culture generally of the Netherlands is the fact that its language is little known beyond its own frontiers. As a result an unusually large number of its inhabitants speak, read, write, and even become authors in foreign tongues. Hence the exotic influences manifest in native literature and art, and a tendency to run after strange gods in both.



ture proper the most remarkable novelist of the period was Arthur van Schendel (1875-1946). Martinus Nijhoff (b. 1894), a poet of playful sensitiveness, A. Roland Holst (b. 1888), a poet of nostalgic and apocalyptic imaginativeness, took little part in the battle of ideas. H. Marsman (1899-1940), the "vitalist" poet and critic, was drowned while trying to escape from France to England; the brilliant and mercilessly critical essayist Menno ter Braak (1902-1940) committed suicide when the Germans entered Holland. Slightly older than any of these, but flowering in poetry generally regarded as great only in the 1940s, was P. N. van Eyck (b. 1887), whose work is marked by a strong philosophic and mystical strain.

The press of the Netherlands was strongly affected by the Second Great War. Of the underground papers which tried to maintain themselves and take the place of organs suppressed because they had continued to appear under German control, the one of importance is the *Parool* of Amsterdam, the *Telegraaf* having been suppressed. Party papers reap-

Netherlands. Types from the southern provinces of the Netherlands. 1. A Zeeland village schoolmaster. 2. Unmarried girls from Zeeland. 3 and 4. Old Gelderland peasants

**EDUCATION.** Education is increasingly practical, and gains much from a zealous public interest. Attendance at school has been compulsory since 1900; the obligatory age is 6 to 13, and there is careful provision for continuation classes. Primary education is free where necessary. An eighth school year introduced just before the Second Great War had to be suspended owing to lack of room in the schools and of teaching staff



Education was the great bone of contention between the Liberals and the Protestant and R.C. parties during the second half of the 19th century. The state schools, which originated from the education law of 1806, were intended for all denominations, and any religious teaching that might offend the susceptibilities of any of the Christian sects or of the Jews was therefore barred. The confessional parties strove to obtain, first the liberty to found denominational schools of their own, next a state subsidy to maintain them. In 1918 at last, by agreement among all parties, Liberals and Socialists gave way to a claim which was founded on conscience, while Protestants and R.C.s abandoned their opposition to universal suffrage, and the constitution was revised accordingly.

Denominational schools are managed by their own boards which appoint the staff; they are supported completely by public finance and are subject to state inspection as to efficiency; teachers must be in possession of the qualifications prescribed by the state. The state schools, which at one time had a monopoly, now accommodate less than half the pupils in the country.

#### Higher Education

Intermediate education is given in professional, technical, trade, commercial, and industrial schools, and schools for special local and industrial needs. In the high (Higher Burgher) schools co-education is general.

When founded in 1863 the Higher Burgher schools with a five-years' course were not intended to prepare pupils for the universities. In the early part of the 20th century, however, it was arranged that their final diploma should admit to the faculties of science and of medicine, and today more than half the university students in those faculties come from the Higher Burgher schools. The certificate of the old-established gymnasium, or grammar school, found in all towns of any importance and having a curriculum with many hours devoted to Latin and Greek, is still required for entry to the faculties of law, theology, and literature.

The state universities of Leyden, founded in 1575, Groningen, and Utrecht, and the municipal university of Amsterdam, which dates from 1875, have faculties of law, medicine, theology, science and mathematics, literature, and philosophy. Utrecht has also a veter-

inary faculty. At Amsterdam there is also a Calvinist university and at Nijmegen an R.C. one.

The technical school at Delft now enjoys university status, as does the agricultural school at Wageningen.

**CONSTITUTION AND GOVERNMENT.** The constitution of the Netherlands has not grown gradually like that of England. During the French period (1795-1815) there was a radical breach with the federal and also with the oligarchic system of the republic. The first constitution of the independent kingdom (1814) retained centralisation, and assigned large powers to the sovereign. The most important revision was that of 1848, when parl. gov. may be said to have been introduced, while prov. and municipalities were given a larger measure of autonomy.

The sovereign, whose person is inviolable, is head of army and navy; the executive power is his. There exists, to advise the crown, a resuscitated historic body, the council of state (*Raad van State*); it has the influence of its individual members, but cannot interfere directly with government. It has some slight judicial powers, but its authority is confined to emergency. Another nominal link between the Netherlands present and past is the provincial states, now, except in respect of defence against river and sea, a purely administrative body. It is popularly elected, but not for political ends, although it, in turn, elects the senators.

#### The States General

Real legislative authority lies with the states general. It comprises two chambers, the first with 50 members, the second with 100. Members of the first, or senators, are elected by the provincial states, on special qualifications, for nine years, one-third retiring every third year. Expenses are allowed them, £2 per day, during session. Their function is to advise or control, not to initiate, legislation.

The 100 deputies in the chamber, as the second is generally known, are (under the Reform Act, 1919) elected for four years by the votes of all citizens of both sexes who have reached 23, on a system of proportional representation. Deputies are paid £500 annually in addition to expenses.

The chambers of the states general meet separately in the historic Binnenhof in The Hague, each under a president appointed by the crown on the nomination of the chamber itself, except for

joint opening and closing sessions, or when specially called together by crisis. The sovereign can dissolve either chamber, or both, at will; a new chamber must be formed within 40 days.

The permanent administration of the provs. is in the hands of a commissioner appointed by the crown assisted by a committee of deputies chosen by the provincial states from among themselves.

In each of the 1,110 communes there is a popularly elected council, which chooses aldermen (*Wethouders*) from its own number. They, with a burgomaster appointed by the sovereign, form the daily executive authority, with control over the communal police.

**DEFENCE.** Service in the army is partly compulsory, partly voluntary. Conscripts are chosen by lot. Total war strength could be raised to 500,000 men (1940). Inundation in "Holland's Fortress" round the citadel of Amsterdam plays a large rôle in the scheme of defence, even though in the Second Great War it was made useless by surprise air tactics (see Netherlands: Second Great War). Her armed forces were integrated with those of other Western Union powers in conformity with the defence plans developed under the North Atlantic treaty, 1949.

**JUSTICE.** Courts of justice comprise cantonal (100), district (23), appeal (5), and the high court at The Hague, the judges being appointed by the sovereign for life. Civil and criminal cases are tried in all courts. Dutch law has developed from the *Code Napoléon*.

**HISTORY.** More than one date may be given for the beginning of the Netherlands as a nation. The struggle for liberty of conscience and freedom from unjust levies had been going on already for 15 years when, on July 29, 1581, Holland, Zealand, Utrecht, Gelderland, Brabant, Flanders, Friesland, and Overijssel abjured the sovereignty of Spain. These United Provinces were not recognized by Spain until the treaty of Westphalia, Jan. 30, 1648, by which time Groningen and Drenthe had been included in the confederacy, and Spain had reconquered most of Brabant and Flanders. The period just defined is that of the war of independence.

The great figure in this drama of creating a new power and a new kind of power in Europe was William the Silent, prince of Orange. When he appeared upon the scene, a youth at the court of Charles V, all the provs., both N.

and S., had emerged from a state of flux, under their several counts and bishops, as possessions or fiefs of the Spanish crown, inherited from Burgundy and Austria. Orange, embracing Protestantism, headed the revolt in them against the folly and fanaticism of Philip II and his agents, Alva in particular. Then followed the capture of Brill in 1572 by the "beggars of the sea," the sieges of Haarlem, Alkmaar, and Leyden, and other incidents of the struggle picturesquely, though not always accurately, described by Motley.

After the assassination, in 1584, of Orange, the fight was continued by his two sons as stadtholders: Maurice (1567-1625), the born soldier, and the politically wiser Frederick Henry (1584-1647). The N. provs. issued from it as the powerful Dutch republic — the Netherlands of today. The S. provs. remained the Spanish Netherlands, to become some 200 years later Belgium.

The power of the new republic was a fact long before its enemies acknowledged it. For it the 80 years of war were a period of unparalleled advance, in the empire of the sea, the expansion of commerce, the exploitation of trade and industries, and the arts of peace. The Dutch East India co. was founded in 1602, the West India co. in 1621. In 1609 was established the bank of Amsterdam, pre-eminent among such institutions. With the opening of the 17th century the Netherlands had already passed into its golden age.

#### Dissension and Jealousy

But there was present in it a canker of religious and political dissension which ate into the rich body. The jealousies of the provs. one of another were complicated by those of the towns. There were rival parties of union and secession, fierce contentions for peace and state rights as against war and central government. The quarrel between Maurice and John van Oldenbarnevelt, resulting in the execution of the latter (1619), was significant of the strain of opposing forces which had weakened the republic from the first, and were to cause its fall. The Netherlands, by the immense effort of its earliest days, was left like a boy who has outgrown his strength. Next to its unique physical conditions, this "fatal flaw" in its constitution is the most significant fact in Netherlands history.

In 1641 Frederick Henry's son, William, married Mary, daughter of Charles I of England. This

alliance consolidated the authority of the Orange family, and entangled the United Provinces in the meshes of foreign politics. During the minority of the third stadtholder, William, commercial rivalry involved the republic in the first naval war with England (1652-54).

The third William's troublous minority saw further naval wars, in one of which De Ruyter entered the Thames in 1667, and the formation of the triple alliance between England, the United Provinces, and Sweden. But the prince's tutor, the grand pensionary John de Witt, could not prevent a disastrous renewal of war with France, and he and his brother Cornelis were murdered at The Hague by an Orangist mob. Thereupon (1672) William was declared stadtholder. He proved a great general, and 1697 brought the peace of Ryswick. Meanwhile, in 1677, he had married Mary, daughter of James II of England; in 1689 he, with his wife, mounted his father-in-law's throne, and until his death in 1702 he was both William III of England and the third stadtholder of that name.

#### End of the Stadtholderate

The 18th century was for the Netherlands a period of steady decline. In the war of the Spanish succession (1702-13) the United Provinces shared Marlborough's victories, but were exhausted in the effort. An interregnum in the stadtholdership after the third William's death was followed in 1747 by the election of a cousin, and this fourth William married George II's daughter Anne. The peace of Aix-la-Chapelle (1748) left the Netherlands at a very low ebb. After eight years' regency of the widowed Anne (1751-59) her son William was appointed stadtholder. The old feud of the states against the united power which the stadtholder symbolised was resumed by the patriot party, which, following the French Revolution, welcomed the French in their country (1795). William, fifth and last of the stadtholders, thereupon fled to England.

The period following (1795-1813) was one of French domination. Its successive stages were recognition by France of Dutch independence to 1805; dictatorship of Napoleon through the grand pensionary, Rutger Jan Schimmelpenninck, 1805-06; the reign of Louis Napoleon as king of Holland, 1806-10; annexation by France, 1810-13. In 1813, after Leipzig, G. K. van Hogendorp established a provisional govern-

ment, which recalled the prince of Orange (the fifth William's son) not as stadtholder, but as sovereign. Thus the modern kingdom of the Netherlands came into existence.

After a brief reunion with the former Spanish Netherlands, 1815-30, the southern part rebelled and was in 1839 recognized by the powers as a separate country. Belgium William I abdicated in 1840 in favour of his son, William II, who reigned until 1849. His son and successor, William III, lived until 1890, after which the queen-dowager, Emma of Waldeck Pyrmont, acted as regent until her daughter, Wilhelmina (b. 1880), ascended the throne in 1898. Wilhelmina married in 1901 Henry of Mecklenburg; their only child, Juliana (b. 1909), ascended the throne 1948 on Wilhelmina's abdication. By her husband Bernhard of Lippe-Biesterfeld, Prince of the Netherlands, (m. 1937) she had four daughters, Beatrice (b. 1938), heir presumptive, Irene, Margriet, and Maria.

**POLITICAL LOYALTIES.** Chiefly as a result of the struggle over the schools (see under Education), religion from the middle of the 19th cent. was the basis of Dutch party politics. The revised constitution of 1848 opened an era in which, under direct suffrage, the Liberals were in the ascendant. The R.C.s owed their emancipation in 1795 to the current of thought represented by Liberalism; while the reintroduction of the R.C. hierarchy in 1853 was directly due to the new constitution, and the Liberal ministry under Thorbecke (1798-1872) was driven from power for a while by an outburst of Protestant resentment. Soon, however, the R.C.s began to waver in their support of the Liberals.

#### Nineteenth Century Politics

At the same time, from the old Conservative party there detached itself a group of strict Calvinists, whose numerical strength was, until the suffrage was extended, "behind the electorate," among the lower middle class and peasantry, but who were led by a remarkable thinker, Groen van Prinsterer (1801-1876), and by landed aristocrats. This orthodox Protestant party, which gradually replaced the Conservative party, soon split in two: the Anti-Revolutionary party, composed mainly of members of the *Gereformeerde Kerk*, formed by orthodox secessions, 1834 and 1886, from the *Hervormde Kerk*, and the Christian Historical party, composed mainly of orthodox members of the



*Hervormde Kerk*, which in republican days had been the state church.

The school question led to the at first sight somewhat surprising coalition between the R.C.s and the two Protestant parties, of which Dr. Kuyper (1837-1920), the leader of the Anti-Revolutionaries, and the R.C. leader, the priest Schaepman (1844-1903), were the principal authors. Under Dr. Kuyper's premiership, 1901-1905, the tension between the "Christian" parties and the "paganists" ran high. When the school question was settled in accordance with the wishes of the confessional parties (1918), it was expected that cooperation between R.C.s and Calvinists would not last much longer. A Socialist party (founded 1894) was now an important element in the situation, and the R.C. party embraced progressive forces which seemed to make a re-alignment easy.

Social legislation, with which the last Liberal government of 1897-1901 had made a beginning, was now the great problem. Relations between the R.C.s and the two Protestant parties showed signs of strain; yet virtually the entire period between the two wars was filled by cabinets composed from among the three parties of the right. It was not until 1939 that a definite breach occurred between Dr. Colijn, the strongest statesman of those years, an Anti-Revolutionary of marked conservative leanings, and the R.C.s, whereupon a ministry was formed by a Christian Historical elder statesman, Jonkheer de Geer, into which, apart from R.C.s and others, Socialists entered for the first time. It was this cabinet which in 1940 took refuge in England (see Netherlands: Second Great War).

#### Post-War Developments

Of 51,012 persons arrested and charged with collaboration and other wartime crimes, Anton Mussert, made *Fuehrer* of the Netherlands by Hitler in 1942, and Max Blokzijl, who broadcast German propaganda from Hilversum, were executed on May 7 and March 15, 1946—the first executions in the Netherlands for 92 years. De Geer, who, after accompanying the govt. to London in May, 1940, returned without permission to the Netherlands in the following Sept., was found guilty of high treason in time of war and sentenced May 23, 1947, to a year's imprisonment and three years' probation.

During the war many entertained hopes that the sense of national unity promoted by the

German invasion would survive and break down the religious divisions dominating Dutch politics; and the first post-war cabinet was formed by Willem Schermerhorn, a resistance leader who was a strong advocate of a party without religious affiliations, supported by Willem Drees, another resistance leader and a Socialist. But general elections held in 1946 showed that the old divisions remained. The R.C. party, with 32 (out of 100) members, won most seats, and L. J. M. Beel, its leader, became prime minister, Drees, with 29, remaining in the cabinet.

New elections in 1948 gave the R.C.s again 32 seats, the Labour party 27, the rest being distributed as before among half a dozen other parties. By this time policy in Indonesia was another source of division; and Juliana insisted that the new cabinet should be broadly representative of the nation, in-

stead of a coalition of two parties only. After some difficulty, such a cabinet, led by Drees, was formed. It immediately drew up a bill, passed by the states-general in Sept., amending the constitution so that the Netherlands-Indonesian union could be set up; and in 1949, under United Nations pressure, carried into effect a settlement with Indonesia (*q.v.*).

The Netherlands was a party to the treaty of Brussels, 1948, and shared in later defence and other measures (see Western Union).

*Bibliography.* History of the People of the Netherlands, P. J. Blok, Eng. trans., 5 vols. 1898-1912; History of Holland, G. Edmundson, 1922; A Wanderer in Holland, E. V. Lucas, 1923; Revolt of the Netherlands (1555-1609), 1932, and Netherlands Divided (1609-1648), 1936, P. Geyl; L'Assèchement du Zuiderzée, P. Verschave, 1939; The Dutch, A. Barnouw, 1940; The Dutch Nation, G. J. Renier, 1944.

## NETHERLANDS: SECOND GREAT WAR

P. S. Gerbrandy, Prime Minister of the Netherlands, 1940-45

*Prof. Gerbrandy tells vividly the history of the fighting in May, 1940, and of the resistance and sufferings of the Dutch people during the German occupation. For the fighting in the liberation of the south, see Europe, Liberation of; Schelde; Walcheren, etc.*

On May 26, 1937, the last pre-war elections for the second chamber of the states general were held. They proved a success for the leader of the Anti-Revolutionary party, Dr. Colijn, who formed a right-wing cabinet which continued in office until July 24, 1939.

A cabinet of the right meant one supported by the confessional parties, *viz.* the Anti-Revolutionary party, the Christian Historical union, the R.C. party, all of them with principles and programmes based on the foundation of a religious outlook on life.

A proposal, already accepted by the old chamber, to empower the govt. to take measures against extremist political parties (some thought of the Communists, some of the National Socialists) did not gain the majority of two-thirds of the votes cast as required by the constitution.

Internal division brought about the overthrow of the Colijn cabinet. It was succeeded by another Colijn cabinet, without a parl. majority, which gave way after a few days, and was followed on August 10, by a coalition cabinet formed by de Geer in which all the principal Dutch political currents were represented. The author of this article held a seat in that cabinet as an Anti-Revolutionary, without, however, the official

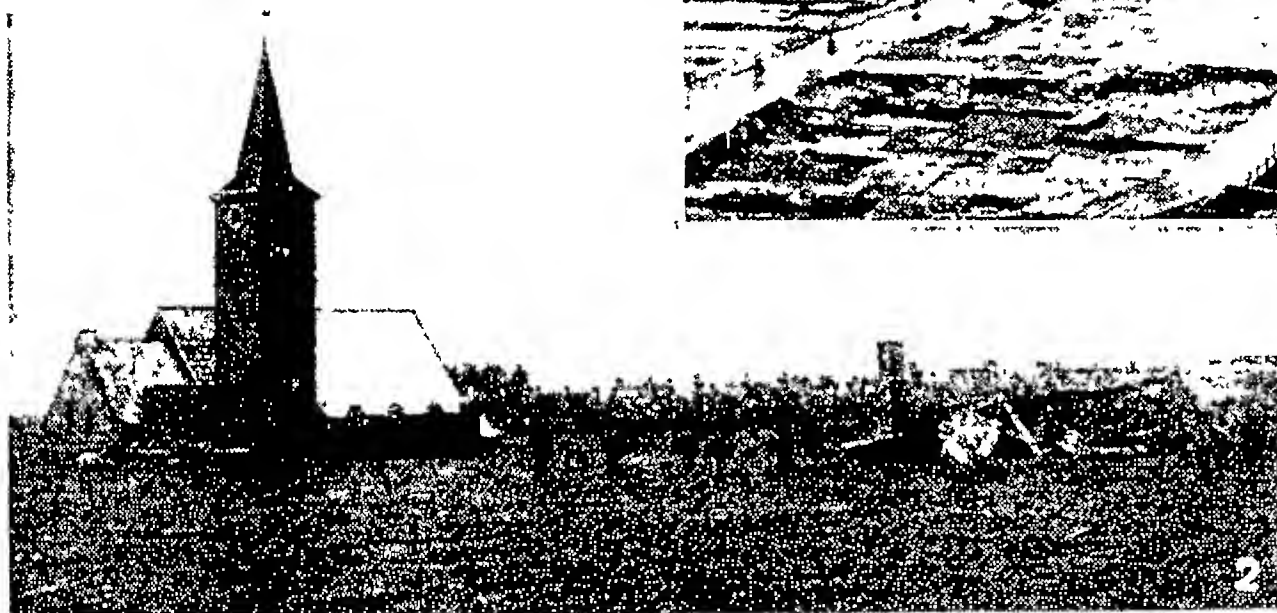
mandate of his party. Shortly after this cabinet came into office, the Second Great War broke out. The Netherlands was again confronted with the problem whether it should remain neutral or take sides. After the League of Nations lost all authority, Dutch foreign policy had tended towards neutrality (the policy of independence). A sudden change of direction was impossible. During a debate in the first chamber of the states general, the govt. as well as members of the chamber, including one of the most prominent, Professor Anema, asserted that to take sides was not imperative. At the same time, people as well as govt. were convinced that in the conflict already looming up, the Netherlands could not but side with Great Britain and France. The govt. made every effort to avoid even the semblance of being provoked by the Germans, but the German invasion, acutely imminent on Nov. 11, 1939, became reality on May 10, 1940.

The invasion had been prepared by fifth columnists, most of whom were non-naturalised Germans exercising their profession or carrying on their trade in the Netherlands; others were Dutchmen, members of the Dutch National Socialist party. For example, a house in The Hague

close to that of the writer proved on May 10 to conceal liaison agents of the Germans, arms, and wireless transmitting and receiving apparatus, which had escaped the keenly vigilant eye of police and secret service. In other places Germanophile persons rendered assistance to parachutists in accordance with instructions given in advance by the Germans. Disloyal elements proved to possess weapons, which they immediately brought to bear against Dutch troops. As a result certain points within The Hague became centres of hand-to-hand fighting between Germans and their collaborators and Dutch soldiers. The same thing happened elsewhere, *e.g.* in Rotterdam.

Diep near Moerdijk connects the E. and S. of the country with the territory within the so-called "waterline" (which checked Louis XIV in 1672); among all the bridges destined to be blown

both with German ground troops and with parachutists dropped to occupy airfields within the waterline. But neither the capture of Moerdijk rly. bridge nor the early loss of airfields within the water-



Netherlands. Scenes during the Second Great War. 1. Result of the overwhelming air bombing of Rotterdam, May 14, 1940, in which the heart of the city was demolished. The Groote Kerk alone stands up among the ruins. 2. Wieringerwerf (built on land reclaimed from the Zuyder Zee), where the waters rose 20 ft. through the cutting of the dyke by the Nazis. 3. Victory parade in Utrecht, May 7, 1945, menaced by concealed Nazis who opened fire

Photo 1, *The Times*

Although the number of Germans in the Netherlands was far more than 100,000 (there was a considerable exchange of nationals between Holland and Germany as a result of years of commercial intercourse), the fifth column was small; its activities none the less were intensive. In several instances Dutch members of the National Socialist movement appeared wearing German uniforms. In the W. of the country the long rly. bridge over the Hollands

up, this was the main one. German parachutists were dropped there very early in the morning, and frustrated the blowing up of this approach to the heart of Holland. Consequently the cities of Dordrecht, Rotterdam, Delft, The Hague, situated within the waterbound area, became unprotected from the moment the enemy succeeded in breaking resistance in the S.E., and very soon after the invasion from the E. fighting occurred within the "waterline,"

line was the decisive factor in the development, which, except in the S.W. of the country, where resistance was kept up for another week, led to collapse after five days' fighting; for within the waterline resistance against the advancing Germans coming across the Moerdijk bridge continued to the end and the airfields lost on the first day were, except one (Waalhaven, near Rotterdam), recovered by Dutch troops within 24 hrs. The decisive factors were German superiority in the air, the German break through the Grebbe line, the bombing of Rotterdam. Despite desperate efforts during the year and a half preceding the outbreak of war, the Netherlands had not been able to bring its air force up to strength. Holland possessed about 200 aeroplanes, and these did exceedingly well—in two days, together with A.A. artillery, they shot down more than 180 German planes—but after that the air battle was over. To the E., before the waterline proper, lies a second waterline including a part (near the Grebbeberg) lying above inundation level. The Grebbe line had originally been intended as a second line of defence (after the Yssel line farther E.), the waterline proper being the third. German strategy forced the Grebbe line to function as the definite line of resistance. Furious battles took place there, thousands of Germans being killed, but their onslaught proved irresistible. Nor did the Germans succeed in



forcing the dyke shutting off from the sea the former Zuyder Zee.

The bombing of Rotterdam, which reduced acres of the heart of the city to ashes, proved that Holland's big cities were bound to be destroyed if the battle were continued, on account of the smallness of the country.

On Whit Sunday, May 12, 1940, the cabinet warned the queen that the moment was approaching when a move from The Hague must be made. Very early in the morning of the 13th, Gen. Winkelman, c.-in-c. of land and sea forces, indicated that the departure from The Hague of the queen and the cabinet was inevitable that very day. Before the morning was over, the queen left for The Hook, where two British destroyers lay ready at need to convey to England the queen, the ministers, the British ambassador, the chief civil officials, and other prominent persons. The cabinet left for The Hook of Holland in the afternoon. Their route ran through territory which was already the scene of skirmishes with the enemy. The queen had departed in the first destroyer, after being subjected to a bombing-attack; in the evening of that day, the cabinet followed, the minister of War having advised them to wait no longer. The plan to go to the S.W. of the country, where resistance could be protracted, had to be abandoned. That the queen did not leave too early is indicated by the fact that she arrived in London at the moment that Rotterdam, of which The Hook is the coastal port, was being bombed. German parachutists had already tried to take the royal palace at The Hague. Later documents have shown that the Germans intended if possible to capture the royal family and the ministers of foreign affairs and of justice.

#### German Brutality

After the capitulation came the German occupation. In its full depth the nature of the occupation can be felt and described only by one who has actually endured it. During the occupation 105,000 Dutch Jews were murdered, more than 2,000 people of the resistance movement were executed, many more were tortured; between 10,000 and 20,000 Dutch died in concentration camps in Germany, more than 4,000 in the Netherlands; 25,000 to 30,000 Dutch civilians were starved to death, 90,000 Dutch people are still missing; enormous

stretches of grass and arable land were damaged by deliberate inundation with salt or fresh water; 380,000 young men, of whom 33,000 did not return, were transported to Germany to work for the German war machine, many of them dragged away like cattle; thousands of millions of capital were stolen, certain parts of cities (e.g. part of the S.W. of The Hague) were pulled down without reason; valuables worth millions were transported to Germany, countless factories were dismantled and transferred to Germany, as a result of which the lack of machinery after the liberation was worse than in any other country of Europe.

#### Manifestations of Resistance

Resistance started on May 15, 1940, the day on which the Germans had conquered the whole of the country. It was thus instantaneous. It had many aspects, according to the circle within which it manifested itself. The churches resisted by proclamations, made by a particular body or in common by all, and read from the pulpit all over the country on the same day. The proclamations on the pogroms and the deportation of Dutch civilians were particularly moving.

The schools, notably the denominational schools, insisted on maintaining their right to determine the nature of the school programme, to appoint and discharge the teachers, to maintain the national character of the education they gave. Like the clergy, many teachers paid for that battle with their lives. The physicians developed so massive a resistance that the Germans had to give in; the protest made by this group when in Nov., 1944, young men were dragged away from Rotterdam and elsewhere as slave labour is another moving document against the oppressor.

750 illegal papers were published; at first they were cyclostyled, later printed. The best known, e.g. *Vrij Nederland*, *het Parool*, *Trouw*, several of them with hundreds of thousands of readers, continued to appear after liberation though the unity which characterised them during the occupation soon disappeared.

The principal resistance organizations were (1) The *Ordedienst* or O.D. (order service) which was under military discipline, had a special character in each province, and aimed in particular at having ready an organization to maintain order at the moment

of the liberation. In the autumn of 1944 the local O.D. at Middelburg intimated to the advancing British troops through its well-organized telephone and radio service that, although they had abandoned the scheme, they could occupy the town, all treacherous elements having been locked up.

(2) The *Landelijke Organisatie voor Hulp aan Onderduikers* or L.O. (rural organization to help "divers") which provided safe accommodation and sustenance for one million civilians who had risked their lives out of a total of nine millions in a country where the Germans controlled the entire rationing machinery. The gossip network of organization, the devotion, the minute falsifications involved in this work in the small, flat, densely populated Netherlands, can scarcely be imagined. The primary aim of this organization entailed all sorts of other tasks.

(3) The *Knokploegen* (K.P.) (knuckles gangs) which charged themselves with the liberation of arrested people, the destruction of population registers, etc. One left-wing group burned the Amsterdam population register, which upset German plans for deporting slave labour on the basis of this meticulous record.

(4) The *Raad van Verzet* (council of resistance), which formed an integral part of the Netherlands military forces of the interior, when these were formed.

#### Seyss-Inquart as Ruler

The K.P. gangs, always willing to venture upon the most dangerous undertakings, reflected the relentless resolution of the whole resistance. One relatively small group centred upon an illegal paper saw 170 of its members executed. In many cases the bonds between those who survived remained as strong as ever, and this spirit of the resistance, with its notable element of spiritual combat against the oppressor, found its way in many guises into post-war literature.

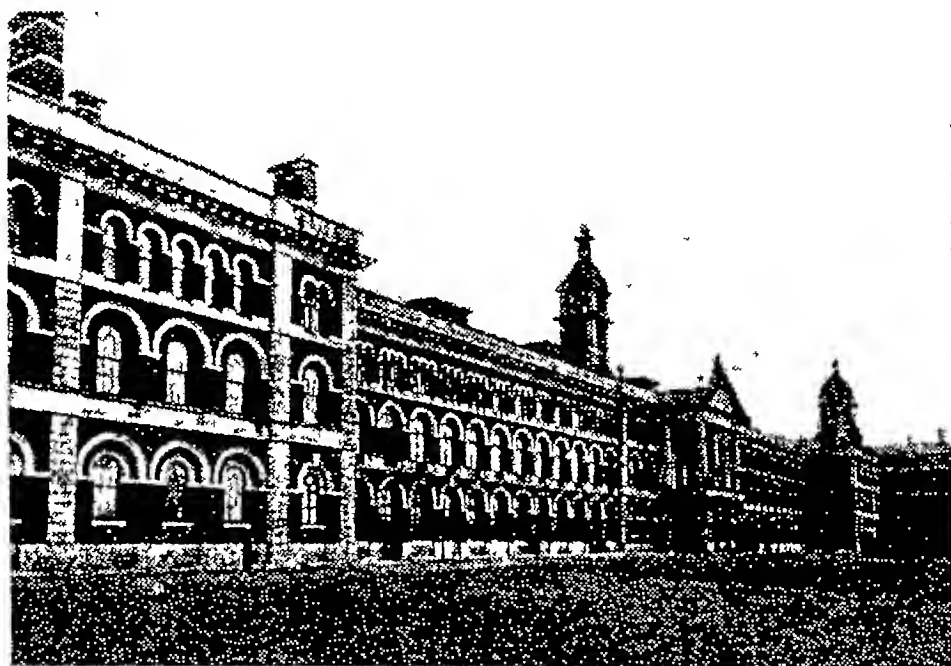
The Germans pretended that the Dutch were a somewhat neglected part of the great German nation, and they took measures in the Netherlands which were taken neither in Belgium nor in France. The Netherlands came not only under military, but also under civil administration, which was placed in the hands of Seyss-Inquart, one of the most abominable but most able of the Nazi leaders. At first he tried to win the people, but as he did not

succeed, he took measures gradually increasing in mad severity. The Germans wanted to make it clear to the Dutch people that if they did not wish to be what they were, *i.e.* part of Germany, they were destined totally to disappear. Documents discovered after the war prove the Germans' intention to transfer most of the Netherlands population to the E. of Europe.

The suffering of everyone was intense. Indescribable misery in the form of starvation was caused during the winter of 1944-45, especially for those who lived in the N.W., which remained unliberated to the last moment. This winter will be recorded in history as an unprecedented calamity. Thousands on the brink of starvation roved *e.g.* from Amsterdam to Wieringermeer, from places in the S. right across the country to the E.; some saw the food they had collected from the farms looted by the oppressor at the very last moment, some never returned. Other countries of the world know calamities as great. But this catastrophe befell a land that until shortly before the war had lived in comparative luxury, and it was caused by the deliberate act of the German oppressor, who took vengeance for the general strike of all railwaymen in the Netherlands which began on Sept. 17, 1944, at the suggestion of the exiled government in London. The railwaymen did not return to work until the oppressor had capitulated.

An Allied attack from the S. towards the North Sea must, it was decided, be made only in extreme emergency, as it might result in the total destruction of the most thickly populated, most highly industrialised and prosperous part of the country which includes the cities of Amsterdam, Alkmaar, The Hague, Rotterdam, Utrecht, Haarlem, Leyden, and Delft. Deputies of the underground movement and the Netherlands government in London agreed to call on the British government to come to the aid of the starving people. Strong action taken by Winston Churchill after consultation with President Truman led to the charging of Gen. Eisenhower with the order to compel the German occupation forces not to resist relief work. The dropping of food parcels by the R.A.F. in the stricken area began on April 29, 1945.

On Sept. 3, 1940, the de Geer cabinet which arrived in London



Netley, Hampshire. Courtyard and main entrance to the Royal Victoria Military Hospital  
Cribb, Southsea

on May 14 was replaced by the Gerbrandy cabinet, whose task was to continue the battle alongside the Allies outside the mother country, and to take up and maintain contact with the people of the conquered territories. After inaugurating battle in the Pacific with the declaration of war on Japan on Dec. 7, 1941, this cabinet continued in office until Feb. 24, 1945. A second Gerbrandy cabinet, coming into office immediately, included several persons from the liberated S. of the country, and after the German capitulation and the liberation of the whole country, May 5, transferred the seat of government once more to the Netherlands.

On June 23, six weeks later, the Gerbrandy cabinet, in conformity with its intention expressed long before, resigned.

**Netherlands Antilles.** Collective name for the islands of the West Indies belonging to the Netherlands: Curaçao, Aruba, Bonaire in the Leewards; St. Eustatius, Saba, part of St. Martin in the Windwards. Total area 384 sq. m. Pop. (1955) 183,795. See under the names of the islands.

**Netherlands East Indies.** Former Netherlands possessions in the E. Indies. See Indonesia.

**Netherlands West Indies.** Collective name for the Netherlands Antilles and Surinam.

**Nether Stowey.** Village of Somerset, England. Situated 9 m. W. of Bridgwater, it was 1796-98 the residence of S. T. Coleridge.

**Néthou, PIC DE (Sp. Aneto).** Highest peak of the Pyrenees. It is in the Maladetta group; alt. 11,168 ft.

**Netley.** Village of Hampshire, England. It stands on the side of Southampton Water, 3 m. S.E. of Southampton, with a rly. station. Here are the extensive ruins of a Cistercian abbey, founded about

1239. In 1856 a military hospital, the Royal Victoria, was begun at Netley. It was opened in 1863 and became the largest on the peace-time establishment of the R.A.M.C. It has accommodation for 1,100 patients, and trains personnel of the army medical services. In the First Great War, it was used for Australian

forces based in Great Britain, and during 1943-45 it was occupied by U.S. army medical services. Pop. 1,500.

**Net Personalty.** Legal term to denote the total personal or movable property left by a testator, less any charges for debts which may lie against the estate. Personal property is defined as consisting of such items as money or goods, and such rights and profits as relate to these. Real property, which is distinct from net personalty, consists of land and buildings which are immovable.

**Net Price.** Term to denote the real price, not the nominal price without discounts, of an article. The net book agreement of 1899, still in operation, was the result of a move by publishers and booksellers to stop the practice of underselling then prevalent in sections of the book trade. "Net Books" are published at net prices and supplied to the retailer on condition that they are not sold to the public at less than that price within a specified period.

**Netsuké (Jap., attached root).** Toggle or button on a Japanese kimono. The kimono has no pockets, and the netsuké is used to attach a cord from which is suspended the wearer's writing-case, purse, and keys. The original netsukés were of carved cherry wood, but later ivory, coral, agate, marble, jade, ebony, amber and metal were used. On account of their elaborate carving—usually illustrating figures, animals, and fairy-tales—netsukés are collected by Europeans. A fake can be detected by its sharp edges, which would not be suitable for actual use, and the absence of wear at the sides of the holes.

**Nettle (*Urtica dioica*).** Perennial herb of the family Urticaceae. It is a native of the N. temperate



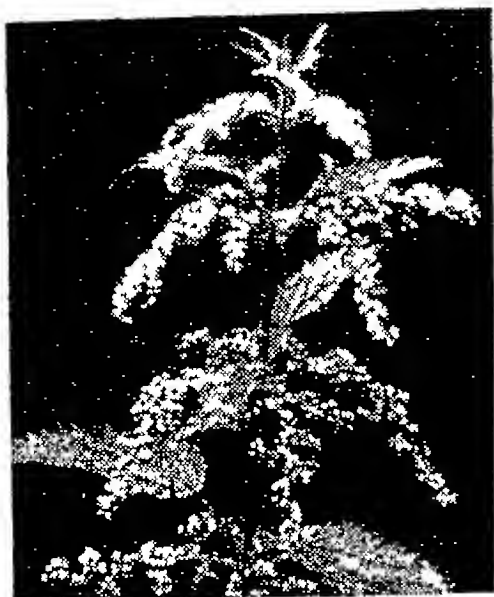
regions, S. Africa, and the Andes. The creeping rootstock sends out runners, soon forming a large colony. The oval or lance-shaped, opposite leaves are downy and well furnished with stinging hairs; the edges strongly toothed. The flowers are small and green, the males being in separate, looser clusters than the females. A smaller annual species (*U. urens*) has smooth leaves with stinging hairs, and the clusters few-flowered. Another annual is the Roman nettle (*U. pilulifera*), a coarser-looking plant, whose leaves, save for the stinging hairs, are also smooth. The Australian tree nettle (*U. gigas*) grows to a height of 100 ft. or more. Nettle-shoots in spring make a valuable pot-herb, and a green dye is obtained from the leaves. Several species of nettle are employed in the manufacture of textiles and ropes.

**Nettle-rash** OR **URTICARIA**. Affection of the skin which occurs in the form of weals or raised patches, at first red and afterwards white and bloodless in the centre, but red at the edges. The condition is more frequent in children than in adults and in females than in males, and is more frequently seen in warm than in cold weather, probably owing to the greater frequency of eating decomposed food and too much juicy fruit, which carries off calcium from the blood, allowing the serum to escape through the vessel walls, thus causing the itching weals. Urticaria may be due to local irritation, such as stings of nettles, insects, jellyfish, etc.; to the eating of unsuitable food, perhaps shell fish, tinned fish, and pork; to the taking of certain drugs; to intestinal parasites; or it may be associated with certain diseases affecting the blood stream, such as diabetes or jaundice.

A saline purgative should be given, anti-itch preparations applied, anti-allergic substances taken, and drugs of the adrenalin family used to shrink the vessels. See Itch.

**Nettle Tree** (*Celtis australis*). Tree of the family Ulmaceae, a native of S. Europe. The oval, lance-shaped leaves are alternate. The small, greenish flowers are succeeded by small, berry-like

fruits, which are black when ripe and very sweet. In Greece they are known as honey-berries. The wood is dense and hard.



Nettle. Foliage and flowers of common stinging nettle

**Nettuno**. Italian resort, 31 m. S.S.E. of Rome. It was anciently the site of a temple of Neptune. Pop. (1951) 15,411.

During the Second Great War British and U.S. troops of the 5th army landed on Jan. 22, 1944, near Anzio (*q.v.*), the port of Nettuno, a position some 60 m. behind the German front line on the Garigliano. The next

day Nettuno was captured, and the Appian Way brought within range of Allied artillery.

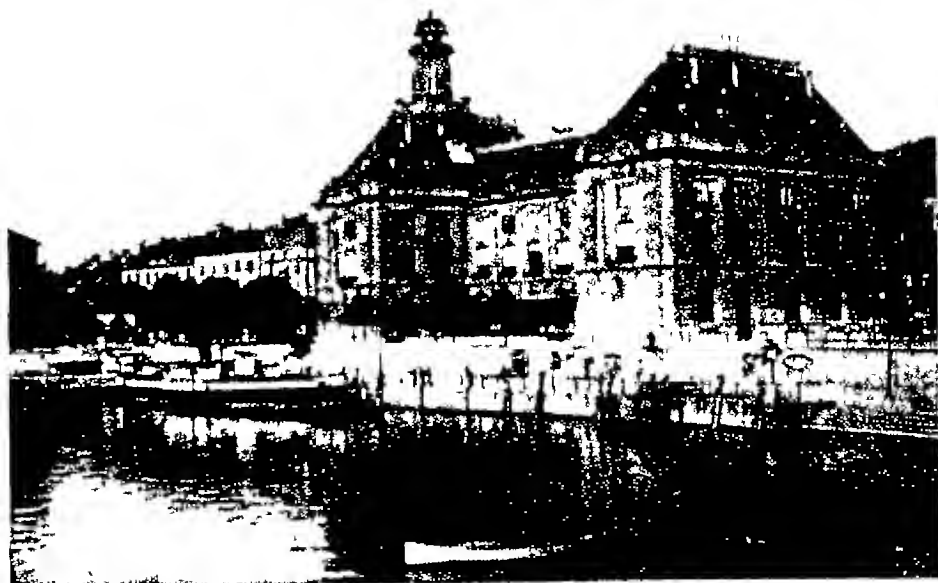
**Neuchâtel**. Lake of Switzerland. It runs N.E. and S.W., between the cantons of Fribourg and Neuchâtel, and touches those of Berne and Vaud. Its extreme length is 24 m., average breadth 4 m., alt. 1,427 ft., depth 500 ft., and area 92½ sq. m. The surplus waters of Lake Morat are carried to it by the Broye, while it discharges its own by means of the Thiele through the lake of Bienne to the Aar. The towns of Neuchâtel, Grandson, Yverdon, and Serrières stand on its banks.

**Neuchâtel**. Frontier canton of N.W. Switzerland. Traversed by the Jura Mts., it is bounded N.W. by France, N.E. by Berne, S. by Vaud, and S. and E. by the lake of Neuchâtel. It is divided into three regions, viz. Le Vignoble, bordering the lake, with an alt. of from 1,500 ft. to 2,300 ft.; Les Vallées, 2,300 ft. to 3,000 ft., and Les Montagnes, a valley in which stand La Chaux de Fonds and Le Locle.

In the lowest area the vine is cultivated, in the Val de Travers (*q.v.*) is a noted asphalt deposit. Cattle-rearing and cheese-making are engaged in, and there are stone quarries. The manufactures are of watches, electrical appliances, screws and knitting machines, and soft goods. The principality was under the kings of Prussia from 1707 to 1857, except for the period 1806-14, when it was French. In

1815 it entered the Swiss confederation, becoming a full member in 1857. Area, 312 sq. m. Pop. (1950) 128,152.

**Neuchâtel** (Ger. *Neuenburg*). A town of Switzerland, capital of the canton of Neuchâtel. It stands at an altitude of 1,300 ft. on the N.W. shore of Lake Neuchâtel, 27 m. by rly. W. of Berne. Fine quays with handsome modern buildings line the lake shore, this new quarter having several public gardens. The old town, to the W., contains a castle of the 12th cent., with later additions; an abbey church, built in the 12th cent., now used for Protestant worship; and a Renaissance market hall, erected in 1570. There are a university, museums, picture galleries, libraries, a school for watchmakers, and many other educational and philanthropic institutions. Neuchâtel has a considerable trade in wine, and manufactures watches, chocolates, jewelry, and printed goods. The in-



Neuchâtel, Switzerland. Hotel de Ville of this town on the shore of Lake Neuchâtel

habitants are mainly French-speaking Protestants. Pop. 23,799.

**Neue Freie Presse**. Formerly Austria's leading daily paper. It was founded in 1864 by Max Friedländer and Michael Etienne, and later published by the Benedict family. It appeared twice daily (12 times a week), was liberal in its political trend and well informed on economic affairs. Its circulation varied from 50,000 to 100,000. It was abolished by the Nazis immediately after the Anschluss of March, 1938.

**Neues Wiener Tageblatt**. Viennese daily paper. It was founded in 1867, and belonged in its later years to the Steyrmühl combine, then the biggest paper-making, printing, and publishing enterprise of Austria. Progressive in its views and with the largest circulation in the country, it maintained a high standard and had its own world-wide news service. It was abolished after the Anschluss of Austria and Germany in 1938.

**Neuilly, TREATY OF.** Treaty signed at Neuilly-sur-Seine, Paris, between Bulgaria and the Allied powers, Nov. 27, 1919. By it Bulgaria ceded small portions of territory on its W. frontier to Yugoslavia and lost a large part of Thrace, on the Aegean Sea. The Dobruja, given to her by the treaty of Bukarest, 1918, was restored to Rumania, and in addition she had to demobilise her army, surrender all arms and munitions of war, and carry out certain reparations conditions. See Bulgaria; Dobruja; Greece; Rumania; Thrace.

**Neuilly-sur-Seine.** Suburb of Paris. Lying E. of the Avenue des Champs Élysées and N. of the Bois de Boulogne, it is entered at the Porte Maillot and extends to the Seine. On the N. was a château of Louis Philippe, destroyed by the mob in 1848. Its midsummer fair is a great popular festival frequented by Parisians. Pop. 60,172.

**Neumann, FRANZ ERNST** (1798–1895). German scientist. Born at Joachimstal, Sept. 11, 1798, he made a study of the specific heats of compounds, as a result of which he formulated Neumann's Law in 1831, i.e. that "the molecular heat of a compound is equal to the sum of the atomic heats of its constituents." He also wrote treatises on the dynamical theory of light and other subjects. Neumann died at Königsberg, May 23, 1895.

**Neumünster.** Town of Slesvig-Holstein, Germany. It is situated between Hamburg and Kiel, 18 m. S. of the latter, and is an important rly. junction. It is an agricultural centre, and has valuable educational institutions, though the Heimat museum was totally destroyed during the Second Great War. It was originally called Wippendorf, but took its present name in 1163, after an Augustinian monastery which was established there. Pop. (1950) 70,400. After May, 1945, it lay within the British zone of occupation.

**Neuquén.** Territory in the W. of Argentina. It is bounded N. by the river Colorado and S. by the river Limay. Sloping E. from the Andean system, it is traversed by the river Neuquén, an affluent of the Rio Negro, and is almost wholly mountainous. There are several large lakes in the S. portion, including Nahuel-Huapi (*q.v.*). On the lowlands numbers of cattle, sheep, and horses are reared. Chosmalal is the capital. Area 37,245 sq. m. Pop. est. 35,000.

**Neuralgia.** Affection of the nerves. It may be a manifestation of a neurasthenic state, or due to

debility, anaemia, exposure to cold, toxic influences, as in gout, diabetes, lead poisoning, malaria, etc., pressure on a nerve trunk from a tumour, or to reflex action from a source of irritation, such as a decayed tooth. Women are more often affected than men. An attack may begin with sensations of discomfort or tingling in the part affected, but often the pain comes on quite abruptly. It is usually very severe, and is described as stabbing, burning, or darting in character.

In the treatment of neuralgia the general health should be built up, and for anaemic or debilitated patients a change of air is often necessary. Sufficient exercise in the open air and a generous diet rich in the whole range of vitamin B are important. All sources of sepsis and of peripheral irritation, such as decayed teeth, should be looked for. Warmth applied by hot-water bags or heated layers of flannel to the affected part often relieves painful attacks, as does short-wave therapy. The nature of neuralgia is not understood. Even after the most violent and prolonged pain there is no change in the microscopic appearance of the nerve, which seems to serve merely as a conducting mechanism. See Nervous System; Sciatica; Tic Douloureux.

**Neurasthenia.** Term used popularly to include all forms of neurotic disorder or neurosis (*q.v.*). Physicians, however, now restrict the term to nerve exhaustion, which may result from prolonged physical strain and hardship, or may be the result of long-continued overwork, especially if associated with business or domestic worries. The most characteristic symptom of neurasthenia is the extreme readiness with which the individual is fatigued by physical or mental effort. Other symptoms are sleeplessness, constipation, and sometimes pain in the back and limbs, irritability, and depression. The best form of treatment is mental and physical rest. In severe cases the Weir-Mitchell (*q.v.*) treatment may be adopted.

**Neurath, BARON KONSTANTIN VON** (1873–1956). German politician. Born at Tübingen, Feb. 2, 1873, he studied law at Berlin University and entered the consular service, being vice-consul in London, 1903–07. He was councillor at the Constantinople embassy 1914–16, private secretary to the king of Württemberg 1917–18, and minister to Denmark 1919. He was ambassador to Italy

1921–30, to Great Britain 1931–32. He became foreign minister in von Papen's govt. in 1932, retaining his



Baron von Neurath,  
German politician

portfolio when Hitler became chancellor in 1933. He represented Germany at the five-power conference on armament equality at Geneva in 1932, and advised Hitler

to withdraw from the conference. In 1938 Ribbentrop replaced him as foreign minister and he became president of the Reich privy council. Following the German occupation of Czecho-Slovakia, he became Reich protector of Bohemia and Moravia in March, 1939. He introduced there Nazi racial laws, abolished trade unions and political parties, and when the Second Great War broke out harnessed Czech industry to the German war effort. In 1941 he was recalled for having been "too lenient," and sent into compulsory retirement. In 1943 he re-emerged as a general of S.S.

Listed as a war criminal, Neurath was arrested by French troops in the last days of the war in Europe and brought to trial before the international court at Nuremberg. He was found guilty on all counts: but the court recognized mitigating circumstances, and, on Oct. 1, 1946, he was sentenced to 15 years' imprisonment. Released from Spandau Nov. 7, 1954, on account of ill health, he died at Enzweihingen, near Stuttgart, Aug. 15, 1956.

**Neuritis.** Inflammation of the trunk of a nerve. It may be localised in one nerve or may be multiple. Localised neuritis is most often due to exposure to cold, injury of a nerve, or extension of inflammation to a nerve from adjacent inflamed tissue. The symptoms are pain in the course of a nerve, and perhaps slight reddening and swelling of the part affected. The functions of the muscles supplied by the nerve are impaired, and there may be some loss of sensation in the skin to which the nerve is distributed. If the condition becomes chronic, there is ultimately extreme wasting of the muscles, with paralysis and possibly contractions.

Multiple neuritis may occur in the course of infectious diseases such as leprosy, diphtheria, and smallpox, may be due to poisoning by alcohol, lead, arsenic.



mercury, and other substances, or may arise in the course of beriberi. In acute multiple neuritis there are constitutional symptoms, such as rise of temperature and headache, with pains in the limbs. Paralysis of the legs and arms appears, with rapid wasting of the muscles. Most patients recover, though improvement may be slow and the paralysis may continue for a year or even longer. Alcoholic neuritis is the most frequent form of multiple neuritis.

In neuritis due to acute poisoning the outlook for recovery is usually good, but the prognosis in neuritis due to long-standing chronic lead-poisoning is not hopeful. Rest is an essential feature of treatment, and in acute cases the patient should remain in bed. Hot applications may be used to relieve pain, and short-wave therapy may be helpful. The cure is the cure of the cause.

**Neuroma.** Tumour which develops on nerve fibres. True neuromata consist of nerve tissue; false neuromata of fibrous tissue. See Tumour.

**Neuron.** Nerve cell. A typical neuron consists of a cell body containing a nucleus, and various fine processes which break up into smaller branches called dendrons. In many cells one of the processes is of great length and forms a nerve fibre, which, with other fibres, constitutes a nerve. The nerve fibre itself breaks up into small branches which are distributed to muscle, skin, and other tissues.

**Neuroptera** (Gr. *neuron*, nerve; *pteron*, wing). Order of insects undergoing complete metamorphosis and bearing two pairs of net-veined transparent wings which are closed roof-like over the body when at rest. The wings of one side are closely alike in size and shape; the antennae are rather long and thread-like and there are no cerci. Both the larvae and adults are carnivorous, preying chiefly upon small insects. There are 60 British species which include the Alder-flies (*Sialis*), Snake-flies (*Raphidia*), Lacewings (*Chrysopidae* and *Hemerobiidae*). In the tropics the Ant-lion flies (*Myrmelion*) attain a large size. No species is injurious to man. Consult British Neuroptera, Killington, 1936-37.

**Neurosis.** Disorder of the mind not associated with any recognizable organic changes, and distinguished from insanity by the fact that it affects chiefly the emotions, and leaves the reasoning powers relatively unimpaired. There are

borderline cases in which it is difficult to diagnose between a neurosis and the early stage of some mental disorders. Understanding of these disorders has been much advanced during the 20th century.

Psychologists now classify neurotic disorders into two main groups, according to their mode of origin, i.e. the "actual" or "true" neuroses, and the psychoneuroses. The essential difference between these sub-groups is that the cause of the actual neuroses can be traced ultimately to some physical disturbance, whereas the psychoneuroses have a purely mental origin and are the last links in a chain of mental processes. The actual neuroses are of various types, and include neurasthenia, anxiety neurosis, and hypochondriasis. Anxiety neurosis is characterised by sudden attacks of acute fear which occur without any cause, and which the patient himself recognizes as being entirely unreasonable. Those who suffer from this disorder have frequently not been able to find a satisfactory outlet for their emotions, either as a result of social circumstances or deliberate suppression. An understanding of the cause of the condition is very helpful to them.

The psychoneuroses are hysteria, psychasthenia, and obsessional neurosis. These conditions are caused by a conflict between the conscious and unconscious parts of the mind. Despite his civilization, man still shares with the lower animals many fundamental tendencies and desires, gratification of which is often in direct conflict with the social teaching and the moral and ethical code to which the individual has been obliged to conform from early childhood. The result is that these wishes are either never allowed to reach consciousness or, if they do, are at once repressed by the individual. Freud has shown that in his development the child passes through a series of emotional phases before maturity is reached.

The exigencies of civilization demand that everyone must experience this process, and most people go through it successfully, i.e. they make the suppressions and repressions necessary to fit them to their environment. Sometimes, however, the suppression is not complete, or the unconscious desire tends to become too strong for the inhibiting forces. The result is that symptoms appear which represent a compromise, and it is these which constitute the neuroses. Treatment consists in investigating the

patient's mind and ascertaining the fundamental nature of the conflict which, unknown to himself, is occurring. This process is called by Freud psychoanalysis.

The normal mechanism of repression sometimes fails to deal adequately with the root causes of neurosis, and punishment symptoms become obvious, e.g. a hysterical paralysis, which cripples a soldier and prevents him from remaining at the front.

**Neuruppin.** Town of Germany, in the *Land* of Brandenburg. It is near the lake of Ruppín, and is situated 30 m. N.W. of Berlin, in a wooded and hilly countryside. It is a rly. junction and is on the Ruppín canal. It had a 13th century church, many fine 18th century buildings, and possessed a school founded in 1365 and many other educational institutions. It was a centre of the manufacture of brushes, leather and iron goods, and was originally established as a town in 1256, and reconstructed by Frederick William II in 1787 after a disastrous fire. After the surrender of Germany in May, 1945, it lay in the Russian zone of occupation. Pop. (pre-war) 21,635.

**Neusalz** (Pol. Nowa Sól). Town and river port of Silesia, placed under Polish administration in 1945, following which event its German inhabitants were expelled. An old town with a church built in 1597, it is on the river Oder, 75 m. N.W. of Breslau (Wrocław) and has yarn-spinning, soap, and paper factories. Pop. (est.) 15,000.

**Neusatz.** German name of the Yugoslav town Novi Sad (*q.v.*).

**Neuse.** River of North Carolina, U.S.A. Rising in the N. portion of the state, it flows 300 m. S.E. to Pamlico Sound, which it enters on the W. side by a wide estuary about 35 m. long. It is navigable for vessels of light draught for nearly 70 of its 300 m.

**Neusiedler See.** Lake of Central Europe. It is crossed by the frontier between Austria and Hungary, and is known to the Magyars as Fertő. The lake is so shallow that its size fluctuates, and in 1865 it dried up completely. The E. side is low and marshy and surplus waters flow away here by the Rábnitz to the Raab and Danube. When the bed is exposed remnants of lake dwellings are visible. The swamps at the S.E. end have been partially reclaimed.

**Neuss.** Town in the German Rhineland. Near the junction of the Erft with the Rhine, 4 m. W. of Düsseldorf, it was a pre-Roman

Celtic settlement and the Roman Novaesium. A Benedictine abbey of the 9th century became later a seat of the archbishops of Cologne. The 13th century church of S. Quirinus, badly damaged in the Second Great War, marks the transition from Romanesque to Gothic. The Renaissance town hall (1638), the arsenal, and the museum were destroyed in that war, and remnants of fortifications deserve mention. Neuss had important engineering, soap, chemical, paper, and food industries, and as an inland port handled up to 4,000 vessels and a million tons a year. Pop., pre-war. 55,971. *Pron.* Noyce.

The U.S. 9th army reached the Rhine at Neuss, capturing it March 3, 1945, after fierce street fighting. After the surrender of Germany it lay within the British zone of occupation.

**Neustadt** (Ger., Newtown). The name of 22 towns in Central Europe, most of them in Germany. The biggest is Neustadt an der Haardt, in the Palatinate, 25 m. W. of Heidelberg. It was founded 1235, granted urban rights in 1275, and frequently conquered by the French, also by Spaniards and Swedes in the Thirty Years' War. Now an industrial town, with metal, engineering, textile, wood, and paper works, and a centre of the Palatinate wine trade, it has a huge Gothic church of the 14th century, a former theological seminary (1579), and a town hall (1743). During the Second Great War it was captured by the U.S. 3rd army March 21, 1945; after the surrender of Germany it lay in the French zone of occupation. The neighbouring Maxburg castle at Hambach (c. A.D. 1000) was the centre of German democratic demonstrations. Pop. 23,135.

Neustadt (Pol. Prudnik) on the Prudnik river, is 15 m. by rly. S.E. of Neisse. Built round medieval and 18th cent. remnants of a monastery, it had linen and leather industries, and a pop. of 17,892 before the Second Great War, during which it was captured by the Russians, March 22, 1945. It was in the area of Germany occupied by Poland at the end of the war. Neustadt near Coburg, with its old church where Luther preached, was a centre of the toy industry of Thuringia. It lay in the Russian zone after the Second Great War. *Pron.* Noyshah.

**Neustrelitz.** Capital town of what was formerly the grand duchy, and then up to 1945 the German state of Mecklenburg-Strelitz; now in Russian occupa-

tion. It was laid out early in the 18th century, in the form of an eight-rayed star around the palace (1726-31), a fine Renaissance pile with Greek elements. Parks, museums, a great library, monuments, and the nearby lakes are attractions in an essentially agricultural town, which has rly. and canal connexion with Berlin and the Baltic. Pop. (1950) 26,000.

**Neustria.** Name given to a Frankish kingdom which had an independent existence in the 6th-8th centuries. It was so called because at the time it was the newest conquest of the Franks. It was the western of two kingdoms, Austrasia being the eastern one, and was bounded roughly by the Seine, the Loire, and Brittany. After the union of the two kingdoms in the 8th century, the word Neustria remained for some time in use, but the district to which it applied was never exactly defined.

**Neutrality.** Term used in international law to denote the condition of a state when there is a war, and that state is not at war with either belligerent. It dates from the 17th century. The duty of a neutral, put generally, is to refrain from giving effective assistance to either belligerent—a duty which is construed ever more widely. Thus, a neutral must not, when a place is besieged, introduce supplies into that place, because that would be interfering with a military operation; nor may he grant loans or furnish munitions of war to either belligerent. Still less may he allow either belligerent to prepare on his territory warlike acts against the adversary.

A neutral ship which tries to break a blockade is liable to capture. A neutral state must not allow belligerent ships of war to use its harbours, except under stress of weather, and then only for a limited time and not to replenish armed stores. A belligerent must not march troops into or through neutral territory; and if soldiers of a belligerent, to escape capture, or even by mistake, overstep the border of a neutral state, the latter ought to compel them to surrender, and to intern them until the end of the war, such troops being bound to surrender if called upon. The real difficulty in time of war is to reconcile the claim of the neutral state to prosecute its lawful commerce with the claims of a belligerent who has control of the seas to establish a blockade of his adversary's ports and to intercept contraband of war. When great states make war, this virtually means

that a neutral can trade only as prescribed by the naval power.

In 1780 and 1800, during the naval wars, the Baltic powers proclaimed an "armed neutrality." They set up the doctrine of "free ships, free goods"—i.e. goods carried in neutral ships, even contraband, should not be liable to capture—which would have abolished the right of visit and search upheld by Great Britain. The Baltic ships were formed into convoys, protected by ships of war; but Great Britain carried her point, and visit and search was recognized as the law of the sea in time of war.

During 1936-39 Great Britain and France evolved the policy of non-intervention in respect of the Spanish Civil War. This went beyond neutrality and aimed at removing every possible ground of provocation that might lead to being involved in the war. The U.S.A. adopted a similar policy (embodied in the Neutrality Act of 1937) designed to keep her out of any war in Europe.

The covenant of the League of Nations and the United Nations charter introduced a new conception of neutrality. In any war today one of the belligerents will be at war contrary to its international obligations; and other members of the community of nations will be entitled to take reprisals against that belligerent and to allow the other belligerent to do acts which are not in accordance with the old conception of their duty as neutrals. This change was illustrated in the Second Great War when the U.S.A. transferred 50 destroyers to the U.K., and by the Lease-Lend (*q.v.*) Act, 1941, passed by the U.S. congress before the U.S.A. was at war. See *Angary*; *Contraband*; *International Law*; *Non-belligerency*.

**Bibliography.** Studies in International Law, T. E. Holland, 1898; International Law, G. Schwarzenberger, 1945; International Law, 2 vols., Oppenheim, 6th ed. 1947.

**Neutrino.** Hypothetical sub-particle having a mass less than a tenth that of an electron, no electric charge, and half integral spin. It was proposed by Pauli in 1933, and its effect worked out by Fermi to account for the fact that  $\beta$ -particles are ejected from atomic nuclei at all energies from zero up to a maximum, without altering the spin of the nucleus.

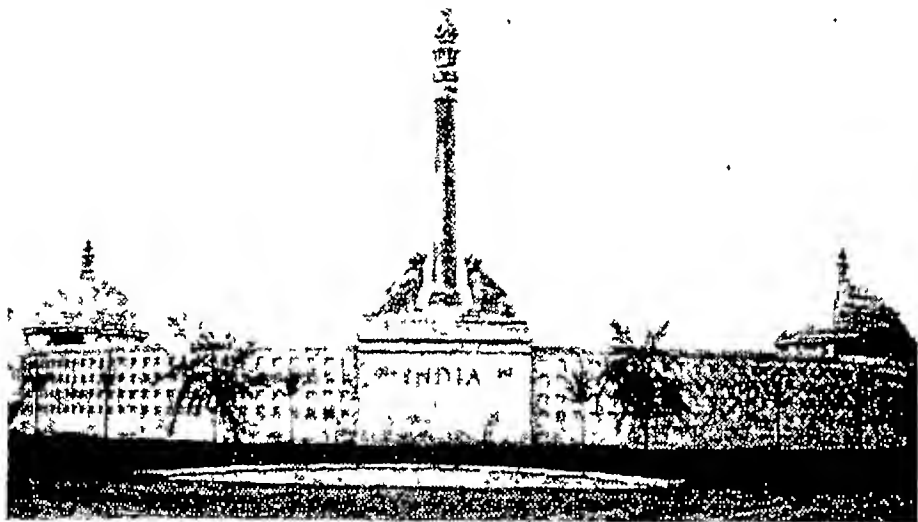
Although the neutrino has not been directly detected by any known technique, its existence is now fairly widely accepted.



**Neutron.** Sub-atomic particle, with mass slightly greater than that of a proton, and no electric charge. All atomic nuclei, except ordinary hydrogen, contain neutrons as well as protons, the average proportion of neutrons to protons rising with increase of mass number. The existence of the neutron was first proved in 1932 by (Sir) James Chadwick.

Very powerful streams of neutrons were later produced in nuclear reactors. They are used both for the production of new isotopes and tracer elements, and for the investigation of crystal structure by means of neutron diffraction.

**Neuve Chapelle.** Village of France, in the dept. of Nord, 8½ m.



Neuve Chapelle. Memorial to those Indian soldiers who died in France in the First Great War, and who have no known graves

S.W. of Armentières. It gives its name to an important battle of the First Great War. The old village was almost destroyed in the war.

The battle was fought between British and Germans, March 10-12, 1915. Sir John French, British c.-in-c., determined upon an attack to prevent the dispatch of German reinforcements to the E. front and to assist the French at Arras. The point selected was Neuve Chapelle, which had been on the German side of the line from Oct., 1914. The assault was made by the 4th corps, under Rawlinson, from the N., and the Indian corps, under Willcocks, from the S., with the 3rd and 1st corps making holding demonstrations to the N. and S. respectively. The German front was held by the 6th army. In spite of inadequate British munition supply, enough had been accumulated for a violent 40-minute bombardment by 480 guns. The R.F.C. secured decided local superiority in the air.

The bombardment opened at 7.30 a.m., March 10, and airmen bombed rly. bridges and junctions to the German rear. The infantry advanced at 8.5. The Indians carried four lines of trenches and en-

tered the village. To the N. the 4th corps found the artillery had been less successful in preparing the ground, and losses were heavy: but they also reached the village, where all resistance was ended by 11 a.m. The plan now required a further advance E. to drive a deep wedge into the German front before the Germans had recovered from the initial surprise. But this was held up for some hours by the late arrival of reserves, through faulty staff work. The Germans were able to take up strong positions, and the attack came to a standstill after about 1 m. of ground had been gained and the Neuve Chapelle salient cleared.

A renewal of the attack was ordered on the 11th, but the order did not reach all units; and an attack by units of the Indian corps was beaten back with heavy loss. By March 12 German reserves had arrived to deliver a number of counter-attacks, though no ground was regained. British casualties were 2,527 killed, 8,533 wounded, 1,751

missing. German losses were almost as large. On the section captured by the Indians 2,000 German dead were counted. A shrine in memory of Indian soldiers was unveiled at Neuve Chapelle in 1927.

**Neuwied.** Town of Germany, 8 m. N. of Coblenz on the right bank of the Rhine, where it is joined by the little river Wied. The chief building is the palace, once the residence of the princes of Wied, which stands in a large park. The chief industries are the manufacture of soap, tobacco, and various iron and engineering products. A feature of the place is the Moravian colony, to one of whose schools here George Meredith was sent as a youth. In the little county of Wied, Neuwied was founded by one of the counts (later princes) of Wied in 1653, and was made their residence. There had been a village here named Langendorf. Pop. (est.) 25,000.

**Neva.** River of N.W. Russia, in the region of Leningrad. Rising in Lake Ladoga, it flows S.W., then N.W. through Leningrad, and, dividing into several branches, discharges itself into the Bay of Neva in the Gulf of Finland. It

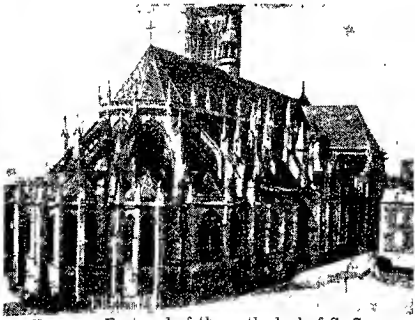
is an important commercial waterway, the final link in the communication between Leningrad and the White and Caspian Seas. Length 45 m.

**Nevada.** Western state of the U.S.A. Lying almost entirely within the Great Basin, a plateau at the foot of the Sierra Nevada and Wasatch mts., its surface (mean alt. 5,500 ft.) is marked by numerous small mountain ranges, between which lie tracts of marshy lands, converted at times into large lakes. Boundary Peak (13,145 ft.) in the W. is the highest point in the state. The principal river is the Humboldt, and the S. Pacific rly. follows the course of the river. Mining is important—the state includes the famous Comstock lode, long a rich source of gold and silver, as well as deposits of many other minerals; but its principal industry is dry-farming by means of irrigation. Forage crops, fruit, and vegetables are the principal crops. Cattle are raised, in particular on public lands, which form 87 p.c. of the state's area. The city of Reno (*q.v.*) has become notorious as a place for easy divorce: the state laws require no notice of a divorce suit, and only six weeks in which to establish residence. Las Vegas, in the S.W., is a gambling centre, accessible to Los Angeles and Hollywood by motor road. Hoover Dam (*q.v.*) is 25 m. S.E. of Las Vegas. The cap. is Carson City.

Nevada was part of the territory taken from Mexico in 1848. It became a state of the U.S.A. in 1864, and sends two senators and one representative-at-large to congress. For local affairs it has a state legislature of two houses. Its area is 110,540 sq. m., and its pop. (1950) 160,000, was little over one per sq. m. It is the most arid and least populous of the 48 states. *Consult* Desert Challenge: an Interpretation of Nevada, R. G. Lillard, 1942.

Nevada City, situated in California, 165 m. N.E. of San Francisco, is the co. seat of Nevada co.

**Nevers.** City of France. It stands where the Nièvre falls into the Loire, 32 m. from Bourges and 160 from Paris, and is the capital of the dept. of Nièvre. The cathedral of S. Cyr was begun in the 11th century and finished about 1500. It was originally two buildings, and is Romanesque at one end and Gothic at the other. The church of S. Étienne is noteworthy. The castle in which the counts and dukes of Nevers lived is now the palais de justice and a museum.



Nevers. East end of the cathedral of S. Cyr

It was built in the 15th century, replacing an earlier edifice. Of the city's fortifications a tower remains. There are a town hall, a triumphal arch, and a number of old houses in the steep and narrow streets. The industries include potteries, tanneries, oil mills, iron foundries, and the making of boots and shoes. Nevers began as a Roman settlement. About 500 a bishopric was founded here, and about 1000 the counts of Nevers appeared, the county being known as the Nivernais. At one time in possession of the dukes of Burgundy, it was made a duchy about 1530. The last duke, a member of the family of Mazarini, died in 1798. Pop. (1954) 35,183.

**Nevill**, LADY DOROTHY FANNY (1826-1913). British writer. She was born in London, April 1, 1826, daughter of Horatio Walpole, third earl of Orford (1783-1858). In 1847 she married her cousin Reginald Nevill (d. 1878), and became known as a hostess. She was author of *Mannington*



Lady Dorothy Nevill, British writer  
*Elliot & Fry*

and the *Walpoles*, earls of Orford, 1894; *Reminiscences*, 1906; *Leaves from the Note Books of Lady Dorothy Nevill*, 1907; *Under Five Reigns*, 1910. Died March 24, 1913.

Her third son, Ralph Henry, wrote *Life and Letters of Lady Dorothy Nevill*, 1919.

**Neville**. Name of an English family. Founded in the 12th century, it was connected with Durham, Northumberland, and Yorkshire. Ralph (d. 1367), 2nd baron, defeated and captured David Bruce at the battle of Neville's Cross, 1346. Another Ralph (1364-1425) became earl of Westmorland and married a daughter of John of Gaunt; while his daughters married leaders of the Yorkist

and Lancastrian parties. Ralph's grandson Richard, earl of Warwick, was the greatest figure in the family. Charles (1543-1601), 6th and last earl of Westmorland, took part in Northumberland's rebellion of 1569, was attainted, and forfeited his estates, including Raby Castle (*q.v.*). Junior branches of the family hold the titles of Abergavenny and Braybrooke (*q.v.*). See Warwick Earl of.

**Neville's Cross**, BATTLE OF. Fought between the English and the Scots, Oct. 17, 1346. During the absence of Edward III on campaign in France, David, king of Scots, invaded and ravaged the north of England. The English nobles, with the archbishop of York, marched to repel the invasion, and the two armies met at Neville's Cross, near Durham. The English archers opened the fight, and the Scots were defeated with heavy loss, their king being among the prisoners.

**Nevinson**, CHRISTOPHER RICHARD WYNNE (1889-1946). British painter. Son of H. W. Nevinson (*v.i.*), he was born in London, Aug. 13, 1889, and educated at Uppingham, the Slade school, and Paris. First exhibiting in London, 1910, he showed regularly with the New English Art Club, and later at the Royal Academy, of which he became an associate in 1939. An official war artist during the First Great War, he adapted the methods of Cubism to express the facts of mechanical warfare, a notable example being *La Mitrailleuse*, in the Tate gallery. Later he developed a more naturalistic style, and in the Second Great War painted notable studies of aircraft in flight. In 1927



C. R. W. Nevinson  
British painter

H. G. Wells presented his painting *Studio in Montparnasse*, to the Tate. Nevinson published an autobiography, *Paint and Prejudice*, 1937. He died Oct. 7, 1946.

**Nevinson**, HENRY WOODD (1856-1941). British writer. Born at Leicester, Oct. 11, 1856, he was educated at Shrewsbury, Christ Church, Oxford, and Jena university. He went to Crete during the Greek rebellion against the Turks, 1896, and his dispatches appeared in the *Daily Chronicle*. He later joined the staff of that newspaper. After reporting the Cuban war, he went to S. Africa, where he was in the siege of Ladysmith. He was leader writer to the *Daily News*, 1908-10, for which, with the *Daily Telegraph*, he was a war correspondent during the First Great War. His marked sympathy for the oppressed was combined with a sense of irony. President of the London P.E.N. in 1938, his publications included three autobiographical works, *Changes and Chances*, 1923; *More Changes, More Chances*, 1925; and *Last Changes, Last Chances*, 1928, and an astute study of the English character, *Rough Islanders*, 1930. He died Nov. 9, 1941.

**Nevis**. Loch or arm of the Atlantic Ocean in the S.W. of the co. of Inverness. It is a typical Scottish sea loch, 14 m. in length, and from 1 to 4 m. wide. See Ben Nevis.

**Nevis**. Island of the British West Indies, one of the Leeward group. It lies 2 m. S.E. of St. Kitts, with which and Anguilla (*q.v.*) it is administratively joined.



H. W. Nevinson,  
British writer



C. R. W. Nevinson. *Notre Dame de Paris*: an example of this painter's later and more naturalistic style



Its maximum length is 8 m., breadth 4 m., and area 50 sq. m. There are mineral springs near Charlestown, the port and capital on the S.W. coast. Cotton, sugar, cocoa, limes, vanilla, oranges, and coconuts are produced. Discovered by Columbus in 1498, Nevis was colonised by the English in 1628. Pop. 11,383.

**Nevski Prospekt** (Russ., Neva Street). Main thoroughfare of Leningrad, now usually called Oct. 25 Prospekt, and the centre of the commercial life of the city. Among the numerous important buildings on its line of route are the Kazan cathedral and the Duma (town hall). See Leningrad, illus., p. 5074.

**New Albany.** City of Indiana, U.S.A., the co. seat of Floyd co. It stands on the right bank of the Ohio river, 4 m. N.W. of Louisville, and is served by the Chicago, Indianapolis, and Louisville and other rlys. Once a great river port and the largest city in Indiana, the coming of the rly. era has lessened its importance and it is now a centre of the timber and plywood trade. Organized as a town in 1813, it became a city in 1839. Pop. (1950) 29,346.

**New Amsterdam.** Town of British Guiana, S. America. It stands near the mouth of the river Berbice, at its junction with the Canje, 65 m. by rly. S.E. of Georgetown. Rice is grown in the surrounding districts. It was founded by the Dutch, who constructed a system of canals connecting various parts of the town. Most of the houses are built of wood. Pop. 10,000. New Amsterdam was the name given by the Dutch to their settlement on Manhattan Island which became New York city in 1664.

**Newall, CYRIL LOUIS NORTON** NEWALL, 1ST BARON (b. 1886). British airman. Born Feb. 15, 1886, educated at Bedford school and Sandhurst, he qualified as a pilot in 1911, and shortly before the First Great War was engaged in the formation of a flying-school. During the war he served with the R.F.C., becoming chief staff officer, S.E. area, and deputy director of personnel at Air Ministry from 1918. In 1926 he became director of operations and deputy chief of Air Staff. Promoted air vice-marshal in 1930, he held the Middle East R.A.F. command, 1931-34, and in 1937 became air chief marshal. Chief of air staff, 1937-40, he became marshal of the R.A.F. in 1940, and was governor-general of New

Zealand, 1941-46. He was knighted in 1935 and created a baron in 1946. In 1940 he was awarded the O.M.

**Newark.** Bor. and market town of Notts., England. 20 m. N.E. of Nottingham, on the navigable branch of the Trent. Of Saxon origin, it at one time belonged to the Lady Godiva. From the early 12th century it was the manor town of the bishops of Lincoln. The castle was built c. 1130 by Bishop Alexander, rebuilt in stone c. 1173, partly again rebuilt 100 years later; King John died in this castle, of which all that remains is the main gate, a keep-like west tower, and the river wall. The town was held for the king during the Civil War until ordered by the king to surrender in 1646.

Newark arms



The chief building is the cathedral-like church of S. Mary Magdalene; others of interest are the 15th-century Old White Hart, the colonnaded moot hall, the Magnus grammar school, founded 1529, and the town hall, built 1773.

Newark is an agricultural centre. It makes machinery, ball bearings, and plaster; gypsum and limestone are worked near by. Brewing and malting flourish; and beet sugar is produced. Newark, which was incorporated 1549, gives its name to a co. constituency. Market day, Wed. Pop. (1951) 22,917.

**Newark.** City and port of entry of New Jersey, U.S.A., the metropolis of the state and the co. seat of Essex co. It stands on the Passaic river, 9 m. by rly. W. of New York, and is served by the Pennsylvania and other rlys., also by "tube" and electric rlys. to towns in the neighbourhood, and by steamers. The Pulaski skyway, a 3½ m. viaduct, is 145 ft. above the Hackensack and Passaic rivers. Newark's formerly busy airport was closed in 1952 after three crashes in two months on near-by Elizabeth, where 118 were killed.

An important industrial city, Newark has manufactures of jewelry, leather, chemicals, cutlery,

brass and iron products, boots and shoes, clothing, glass, etc. It has 19 insurance companies, employing 30,000 workers. Originally known as Milford, it was settled in 1666 by a colony from Connecticut, and became a city in 1836. Pop. (1950) 438,776, in which the Italian element is dominant.

**Newark.** City of Ohio, U.S.A., the co. seat of Licking co. It stands on the Licking river, 32 m. E. of Columbus, and is served by rly. and the Ohio Canal. Boots and shoes, flour, and chemicals are manufactured here. Textiles from glass have been made since 1933. The Baltimore and Ohio Rly. has works here. Settled in 1801, Newark was incorporated in 1813. Pop. (1950) 34,275.

**Newark Series.** In geology, series of rocks of Triassic age in E. of U.S.A. The series locally carries coal seams and its sandstones are valuable for building.

**Newbattle.** Parish and village, Midlothian, Scotland. It is on the South Esk river, 1 m. S. of Dalkeith. Newbattle Abbey, a seat of the marquess of Lothian, occu-



Newark, Nottinghamshire. Ruins of the gatehouse and walls of the historic castle in which King John died

pies the site of a Cistercian abbey founded in 1140 by King David I.

**New Bedford.** City and port of entry of Massachusetts, U.S.A., the co. seat of Bristol co. It stands on the Acushnet river, whose mouth expands into a commodious harbour, 55 m. S. of Boston, and is served by the New York, New Haven, and Hartford Rly., and by a series of steamers. New Bedford is an important cotton centre, and other manufactures are silk, cut glass, machine-shop and foundry products. Its once famous whale fishery is now almost extinct. New Bedford was incorporated in 1812, and became a city in 1847. In 1928 a strike of textile operatives led here to a new agreement for cooperation to increase production. Pop. (1950) 109,189.

**Newbery, JOHN** (1713-67). British publisher. 'The son of a Berkshire farmer, he became

part proprietor of the Reading Mercury in 1737. In 1740 he set up a publishing business, which he moved to London in 1744, issuing the Universal Chronicle or Weekly Gazette in 1758, and the Public Ledger in 1760. Johnson, Goldsmith, and Smollett wrote for him, and he is described in The Vicar of Wakefield. Newbery, who made a feature of children's books, including Goody Two Shoes, was also a patent medicine vendor. He died Dec. 22, 1767.

**Newbolt, SIR HENRY JOHN** (1862-1938). British poet. He was born at Bilston, June 6, 1862,



Sir Henry Newbolt,  
British poet  
Russell

and educated at Clifton and at Corpus Christi, Oxford. For twelve years he practised as a barrister, but having published an historical novel, Taken from the Enemy, in 1892, and rousing verses of the sea, Admirals All, 1897, he gradually gave up the law to make literature his profession. His later work included The Island Race, 1898, The Sailing of the Long Ships, and The Book of the Happy Warrior. Many of his poems, such as Drake's Drum, and the sequence, Songs of the Fleet, became even more widely known when set to music by Stanford. Also popular were Clifton Chapel and Vitaï Lampada ("There's a breathless hush in the close to-night"). Knighted in 1915, he was professor of poetry in the Royal Society of Literature, 1911-21. His autobiography, My World as in My Time, appeared in 1932. He died April 19, 1938.

**New Brighton.** Resort of Cheshire, England, part of the county borough of Wallasey. It stands at the junction of the Mersey and the Irish Sea. It has a rly. station, and is connected by ferry steamers with Liverpool and Birkenhead. There is a sea front of 4 miles, with sports facilities.

**New Brighton.** Part of New York City, U.S.A. Formerly a separate town on the N.E. shore of Staten Island, it was incorporated with Richmond, one of the New York boroughs, in 1898.

**New Brighton.** Borough of Pennsylvania, U.S.A., in Beaver co. It stands on the Beaver river, 29 m. N.W. of Pittsburgh, and is served by the Pittsburgh and Lake Erie rly. The town grew from Big

Beaver blockhouse, erected during the war of independence. It was first acknowledged as a town in 1815, and incorporated in 1838. Pop. (1950) 9,535.

**New Britain** (Ger. Neupommern). Island of the Bismarck Archipelago (*q.v.*). It is separated from the E. coast of New Guinea by Dampier Strait. Its length is about 300 m., and its breadth narrows to 10 m.; its area is about 10,000 sq. m. The coasts are low and fertile, but the interior is mountainous and includes several volcanoes, some active. The highest point is The Father, alt. 7,500 ft. Well wooded, and with rich vegetation, it has a heavy rainfall and a moist, warm climate. In its northerly projection, Gazelle peninsula, is the port of Kokopo (the former German settlement of Herbertshöhe). There are numerous plantations under rubber, coffee, and cotton. The natives are Melanesians and the pop. is 80,000. It was occupied by Australians in 1914, and government was taken over by Australia under League of Nations mandate, later under U.N. trusteeship.

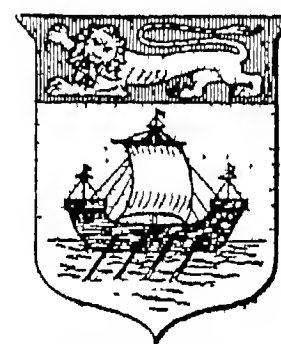
In the Second Great War Japan's assault on New Britain began on Jan. 4, 1942, when the aerodrome at Rabaul was raided. On Jan. 23 Japanese troops landed there, meeting with fierce opposition from Australian forces. There was a further landing at Gasmata on Feb. 10, the occupation of the island being completed by the end of the month. On Dec. 15, 1943, U.S. and Australian troops landed on Arawe peninsula; and eleven days later U.S. marines began to establish themselves on both sides of Cape Gloucester. The two forces linked on Feb. 24, 1944. On March 6 and 9 further landings were made near Talasea; and the Japanese withdrew from their bases at Cape Hoskins and Gasmata into Gazelle peninsula, covering Rabaul, into which port, however, shipping no longer ventured. About a year later the Australians, who in Nov., 1944, had taken over full responsibility for New Britain, began by a series of small but fierce operations to exert pressure on the Japanese, who withdrew slowly N. Fighting was still going on when Japan surrendered

in Aug., 1945. The surrender of all Japanese forces in the S.W. Pacific was signed in St. George's channel, 28 m. S.E. of Rabaul, on board the aircraft carrier H.M.S. Glory on Sept. 6. In New Britain, as in New Guinea, the native people refused voluntary help to the Japanese.

The port of Rabaul, formerly capital of Australian-mandated New Guinea, was virtually destroyed in the Second Great War, and administration of the territory and the adjacent islands was transferred to Port Moresby, in Papua. Kokopo was in 1947 proposed as administrative h.q. of New Britain.

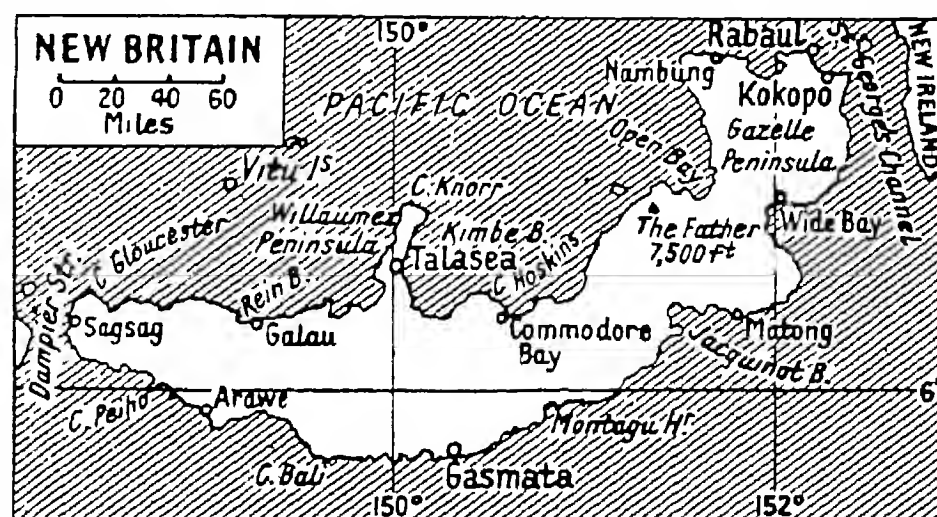
**New Britain.** City of Connecticut, U.S.A., in Hartford co. It is 10 m. S.W. of Hartford, and is served by the New York, New Haven, and Hartford rly. The chief buildings are the state normal school and the R.C. cathedral. New Britain is noted for its hardware. Settled in 1687, it was incorporated in 1850, and became a city in 1871. Pop. (1950) 73,726.

**New Brunswick.** Eastern maritime province of Canada. It is bounded N.W. by the prov. of



New Brunswick  
arms

Quebec, W. by the U.S.A., and on the other sides by the sea, except where the narrow isthmus of Chignecto connects it with Nova Scotia. The surface is undulating, the only flat region lying along the E. coast. In the N. are a number of low spurs



New Britain. Map of the island in the Bismarck Archipelago, the scene of much fierce fighting between Australians and Japanese in the Second Great War.

of the Appalachians. The deeply indented coast, which includes Chignecto and Miramichi Bays and the estuary of the St. John, has many fine harbours. Grand Manan and Campobello islands, both fishing centres, lie off the coast. The longest river is the St. John (450 m.), others being the Miramichi, Restigouche, forming part of the N. boundary, and St. Croix. Grand Lake is the largest lake.



Much of New Brunswick is covered by forests, in which moose and caribou are found, and lumbering and the making of wood-pulp are important industries. The soil is fertile; wheat, oats, barley, and other crops, including apples and potatoes, are raised, cattle are reared, and there is some dairy farming, though more than half the land suitable for farming is not occupied. Iron, coal, gypsum, oil, and other minerals are mined, and natural gas exists. There is a large fishing industry, and ample water power. The railways in the province are the C.P.R. and the Canadian National system. Saint John, the principal port, is open all the year round, and other important centres are Fredericton, the capital, and Moncton.

The prov. is represented in the federal parliament at Ottawa by 10 senators and 10 members of the house of commons. For controlling local affairs there is a parliament of one house, its 48 members being elected for five years and two months, unless sooner dissolved by the lieut.-governor. Responsible to this is a ministry under a premier, and the depart-

ments include those of education, agriculture, land, etc. The towns and rural districts have elected bodies to manage their own affairs. Until 1892, when the legislative council was abolished, the parliament consisted of two houses.

New Brunswick was settled by the French in 1604. Settlers from England and Scotland arrived about 1762, but the province really dates from the end of the American War of Independence, when many loyalists from the U.S.A. made their homes here. In 1784 it was separated from Nova Scotia and made into a distinct prov. It was given a representative assembly, but it was not till 1848 that this obtained any control over the executive council. In 1867 New Brunswick became one of the provinces of Canada. Area 27,985 sq. m. Pop. (1956) 554,616 (about a third French-speaking).

**New Brunswick.** City of New Jersey, U.S.A., the co. seat of Middlesex co. It stands on the Raritan river, at the head of navigation, 30 m. S.W. of New York, and is served by rly. and canal. Here is the state university, including Rutgers College (1766). Surgical

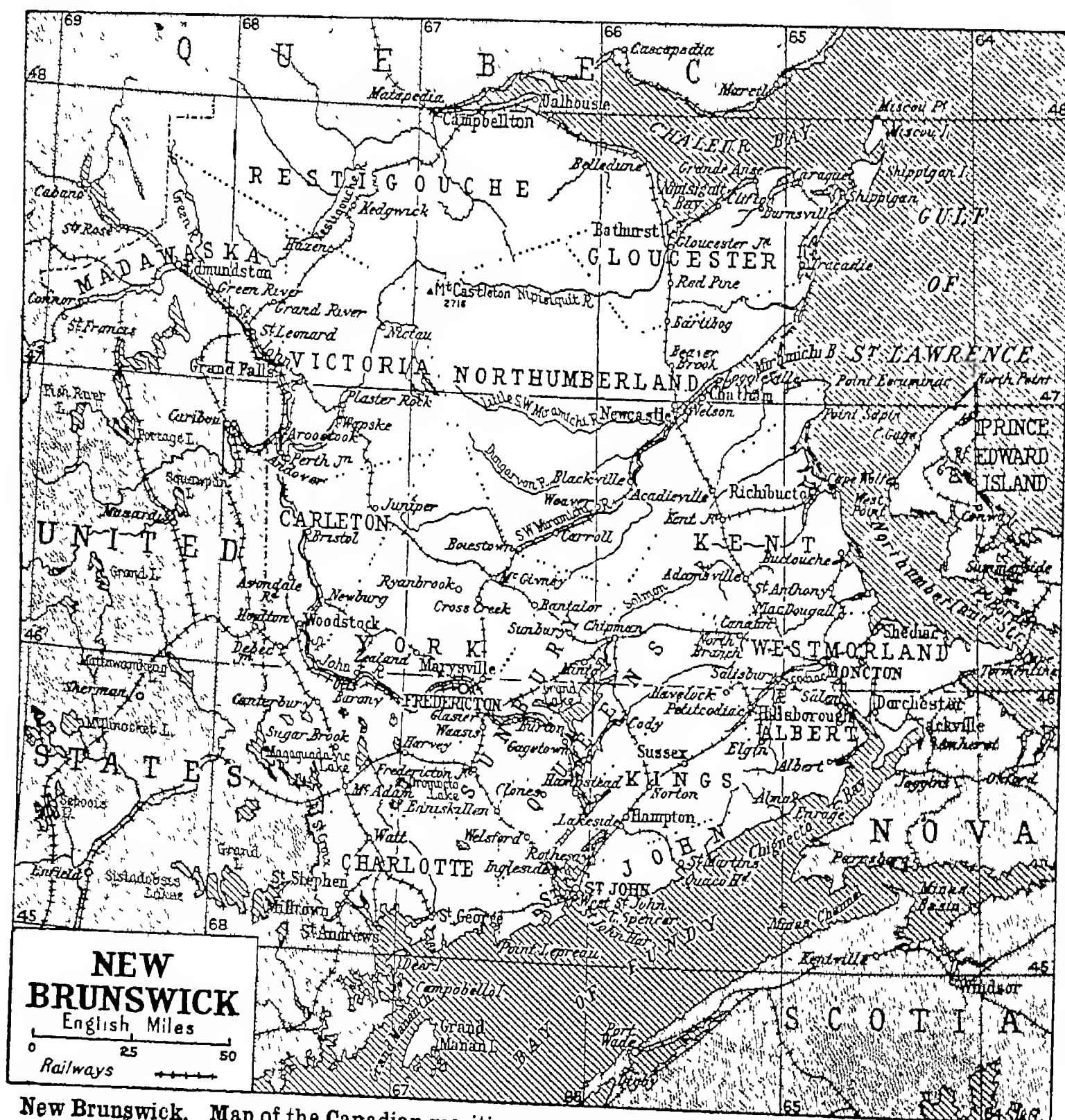
appliances and pharmaceutical products are made. Settled in 1681, New Brunswick was incorporated in 1736, and became a city in 1784. Its present name was given in 1714, to celebrate the fact that a member of the house of Brunswick was king of Great Britain. Pop. (1950) 38,811

**New Brunswick, UNIVERSITY OF.** Educational centre at Fredericton, N.B. It was founded in 1859 to take over King's College, an establishment dating from 1800. The government of the prov. controls its working. Strong in applied science, especially engineering and forestry, it has laboratories, museums, an observatory, and a library. There is a law faculty at Saint John.

**Newburg.** Name of several towns and villages in the U.S.A. The largest, 6 m. S.E. of Cleveland, Ohio, with iron and steel industries, has been incorporated into the neighbouring city. Another is situated on the Ohio river, 10 m. E. of Evansville in Indiana. It is in a noted tobacco-growing district, and has industries connected with coal and coke. Another Newburg is 13 m. E.N.E. of Grafton in

West Virginia. Others are in Maine, 15 m. W.S.W. of Bangor; in Pennsylvania, 6 m. N.N.W. of Shippensburg; in Wisconsin, on the Milwaukee river, 33 m. S.E. of Ford du Lac; and in Missouri, in Phelps co., on the St. Louis and San Francisco rly.

**Newburgh.** Royal burgh and seaport of the county of Fife, Scotland. It stands on the south shore of the Firth of Tay, 8 m. N.N.E. of Cupar. There is a town hall, and the industries include fishing and the manufacture of floor-cloth, linen, etc. Some shipping is carried on from a small harbour. The property of the abbots of Lindores, Newburgh was made a burgh 1266. Ruins of the Benedictine abbey of Lindores, founded in 1178, outside the town, can still be seen: also Macduff's Cross, where the clan was granted sanctuary after a murder. Pop. (1951) 2,367.



New Brunswick. Map of the Canadian maritime province lying between Quebec and Nova Scotia

**Newburgh.** City of New York, U.S.A., in Orange co. It stands on the right bank of the Hudson river, 58 m. N. of New York city, and is served by rlys. and by steamers. Settled by Germans in 1709 and once a whaling port, Newburgh has become a link between the Pennsylvania coal mines and the New England market and has varied industries. Washington's headquarters, a stone structure, is now a museum. The American army was disbanded here in 1783, and a victory tower commemorates the termination of the war. Newburgh was incorporated in 1800 and became a city in 1865. Pop. (1950) 31,956.

**Newburn.** An urban dist. of Northumberland, England. It is on the Tyne, 6 m. W. of Newcastle, and has a rly. station. The old church of S. Michael was restored in the 19th century. Near is the Roman wall, and Roman remains have been found here. There are coal mines in the vicinity; machinery, tools, glass, and fireclay are made, and there are iron and steel works. Pop. (1951) 21,956.

On Aug. 28, 1640, there was a skirmish here. At issue with Charles I, the Scots had sent an army of 25,000 men into England. When they reached Newburn they found the ford there guarded by a body of royalists. After a cannonade, the latter, much inferior in numbers, fled, and the Scots crossed the Tyne.

**Newbury.** Borough and market town of Berkshire, England. It stands on the Kennet and the Kennet and Avon canal, 17 m. W.S.W. of Reading and 53 m. W. of London. It is a junction on the rly., and the terminus of a light rly. The church of S. Nicholas was rebuilt by John Smallwood, called Jack of Newbury, who led 150 men to Flodden and died in 1519. The Cloth Hall is now a museum, and there are old almshouses and an old grammar school.

Newbury's weekly market for cattle, grain, poultry, and general produce serves a wide area. Malting and milling are carried on, pumps and marine engines made. Newbury racecourse is on its boundary. The town includes Speenhamland, and near are Shaw House, an Elizabethan residence, and the remains of Donnington Castle. A borough in the 16th century, Newbury became prosperous through its trade in wool, but soon after 1600 this began to decline. The corporation was reformed under the act of 1835. Market day, Thurs. Pop. (1951) 17,783.

**Newbury, BATTLES OF.** Fought during the Civil War, Sept. 20, 1643, and Oct. 27, 1644.

The parliamentary army under the earl of Essex, about 15,000 strong, was returning through Wiltshire to London, after the relief of Gloucester. To cut it off the king arrayed his army at Newbury, while Rupert and the horsemen had skirmishes at Aldbourne Chase and elsewhere. Essex, however, reached Enborne, a village 3 m. from Newbury, and on the downs between this place and Newbury, with the Kennet to the N., the battle took place. It began with a series of royalist attacks, but the London train bands would not give ground, and elsewhere the parliamentarians stood firm against repeated assaults, making good use of hedges. When darkness came on the royalists, their ammunition exhausted, fell back, and Essex, left in possession of the ground, was able to continue his march. The most notable death was that of Lord Falkland.

In Oct., 1644, the royalist army was operating around Oxford, and the parliamentary forces were sent to engage it. They found the king with about 10,000 men near Newbury, with the rivers Kennet and Lambourn in front of him, and on his flank Donnington Castle, one of his strongholds. The plan of the parliamentarians was for a flank attack. One section, after a long circuitous march, carried out its part of the programme by capturing the village of Speen in the rear of the main royalist position, but the others did little, and night fell without a decision.

**Newburyport.** City and port of entry of Massachusetts, U.S.A., the co. seat of Essex co. It stands on the S. bank of the Merrimac river, 37 m. by rly. N.E. of Boston, and is served by the Boston and Maine rly. It has a safe and spacious harbour. Settled in 1635, Newburyport was incorporated in 1764, and became a city in 1851. Pop. (1950) 14,111.

**New Caledonia.** French island in the South Seas. It is 1,077 m. N.W. of Sydney, is 250 m. long and 35 m. wide, with an area of about 8,500 sq. m. Two parallel ranges cross the island and culminate at 5,570 ft.; the numerous rivers are of little use for navigation. The average annual rainfall is about 40 ins., but much of the island is bare or poor savanna. A fringing reef encircles the island, the inner lagoon providing safe passage for navigation. There are coffee and cotton plantations, cattle runs,

orchards, and vineyards. Nickel of high quality, cobalt, chrome, coal, gold, and other minerals occur; some ore is smelted at Noumea, and a rly. joins it with Paita, 20 m. away. Native Kanakas are the chief labourers. Pop. 62,000.

Discovered by Capt. Cook in 1774, the island became French in 1853. During 1864-95 it was a penal settlement, and the remaining convicts are now kept in the islet of Nou, opposite Noumea, the capital. The Isle of Pines, Loyalty Islands, Huon Islands, Chesterfield Group, Walpole Island, and Mato Island are dependencies of the island. Surprise Island in the Huon group yields phosphate, and Walpole Island guano. The Wallis archipelago, N.E. of Fiji, and Futuna and Alofi to the S. of this group, are more remote dependencies. The colony is administered by a governor, assisted by a privy council and an elected council-general. On Sept. 10, 1940, the island rallied to the Free French.

**Newcastle.** Resort and urb. dist. of co. Down, N. Ireland. It stands on Dundrum Bay, 11 m. S.W. of Downpatrick. Amid magnificent scenery, it is visited for its bathing and golf. A castle built in the time of Elizabeth I has disappeared. Pop. (1951) 3,076.

**Newcastle.** Market town of co. Limerick, Irish Republic. It is 24 m. S.W. of Limerick. Pop. (1951) 2,636. Other places of this name in Ireland include baronies in counties Dublin and Wicklow, and villages in counties Tipperary, Meath, and Galway.

**Newcastle.** Town of N.S.W., Australia. It stands at the mouth of the Hunter river, 102 m. by rly. N.N.E. of Sydney, on the largest coalfield in Australia. Between the town and Catherine Hill Bay the coal seams are exposed in the sea cliffs. The original settlement followed the discovery of coal near the mouth of the Hunter in 1796. Pop. (1954) 178,144.

**Newcastle.** Town of Natal, S. Africa. It stands on the Incardu river at the foot of the Drakensberg, 197 m. from Pietermaritzburg and 160 from Durban, with which it is connected by rail. It is the centre of a coal-mining district, has considerable trade in wool and grain, and has iron and steel works, stone quarries, and brickfields. It stands at an alt. of 3,890 ft. The buildings include town hall and public library. During the Boer War of 1880-81 it served as the British base, and here peace was signed. In the South African War, 1899-1902, its position on the



border of the Transvaal again made it important. The Boers occupied it in their invasion of Natal in Oct., 1899, and it was not regained by the British until June, 1900. Pop. (1951) 18,463 (3,491 white).

**New Castle.** City of Pennsylvania, U.S.A., the co. seat of Lawrence co. It stands at the confluence of the Neshannock and Shenango rivers, 49 m. by rly. N.W. of Pittsburg, and is served by the Baltimore and Ohio and other rlys. Its main industry is the making of hotel pottery. Pop. (1950) 48,834.

**Newcastle.** The chief town of Northumberland co., New Brunswick, Canada, on the left bank of the Miramichi river, at the head of deep water navigation, 102 m. from Moncton. It is the centre of a farming, fishing, and hunting district. Pop. (1951) 4,248.

**Newcastle, DUKE OF.** British title of nobility. The first duke of Newcastle was the soldier, William Cavendish (*v.i.*), who, in 1665, was made duke of Newcastle (upon Tyne). His son Henry, the 2nd duke (d. 1691), left no son, and the title became extinct; but in 1694 it was revived in favour of Henry's son-in-law, John Holles, earl of Clare (d. 1711).

He, too, left no son, and his estates passed to a nephew, Thomas Pelham, who was made duke of Newcastle (upon Tyne) in 1715, and duke of Newcastle (-under-Lyme) in 1756. He was the associate of the elder Pitt. When he died in 1768 his earlier dukedom became extinct, but the newer one passed to a nephew, Henry Fiennes Clinton, 9th earl of Lincoln (*see* that title). Henry, the 5th duke (1811-64), sat in the house of commons, 1832-51. He was first commissioner of woods and forests, 1841-46; chief secretary for Ireland, 1846; secretary for war and the colonies, 1852-54; and for the colonies only, 1859-64. In 1879 Henry (1864-1928) became the 7th duke, and on his death he was succeeded by his brother, Lord Francis Hope, who died in 1941. His son, Henry Edward Hugh Pelham-Clinton-Hope (born April 8, 1907) became 9th duke. An eldest son uses the title earl of Lincoln.

**Newcastle, WILLIAM CAVENDISH, 1ST DUKE OF (1592-1676).** English royalist. He was made earl of Newcastle by James I, 1628. A friend of Charles I, he raised troops against the Scots in 1639, and was tutor to Prince Charles 1638-41. In 1642 he raised the siege of York, besieged



William Cavendish,  
1st Duke of Newcastle  
After Van Dyck

after fighting at Marston Moor, left England and lived in poverty in the Netherlands until after the Restoration, 1660. He was recompensed by several royal offices and the dukedom, 1665, and died Dec. 25, 1676. He wrote plays and two works on horsemanship, 1658 and 1667. He married in 1645

Leeds, April, 1643, and in June defeated the Parliamentarians at Adwalton Moor; he was created marquess in 1643. He was relieved by Prince Rupert at York, and,



Newcastle-under-Lyme, Staffordshire. The High Street of this N. Staffordshire coal centre

Margaret Lucas (d. 1673); she published a life of her husband, verse, and other literary works (*consult* Margaret the First, D. Grant, 1957).

**Newcastle, THOMAS PELHAM-HOLLES, 1ST DUKE OF (1693-1768).** British statesman. Son of Thomas, 1st Lord Pelham, he was born July 21, 1693, educated at Westminster and Cambridge, and succeeded his father in 1712. A rich Whig landowner, and a supporter of George I, he was made earl of Clare, 1714, and duke of Newcastle upon Tyne, 1715. In 1724 he joined Walpole's cabinet, and continued to hold office, save during the winter of 1756-57, until 1762; he was first lord of the Treasury, 1754-56. Made duke of Newcastle-under-Lyme in 1756, he became nominal chief in 1757 of an administration in which "Newcastle said what he liked and Pitt did what he liked" (Pitt being



Thomas Pelham-Holles, 1st Duke of Newcastle  
After Hoare

secretary for War), until both were dismissed by George III. Newcastle was lord privy seal, 1765-66, and died Nov. 17, 1768. For a politician of his time he was uncommonly honest. His correspondence with Chesterfield, ed. R. Lodge, was published in 1930.

**Newcastle Emlyn.** Urban dist. of Carmarthenshire, Wales. It is mainly on the left bank of the Teifi, 10 m. S.E. of Cardigan. Across the river is Cardiganshire. The place was a Roman station, and got its name when a Norman castle was built here. The first printing press in Wales was set up here. Pop. (1951) 765.

**Newcastle - under - Lyme.** Bor. and market town of Staffordshire, England, taking its name from the "new castle" founded on the Roman Limes Britannica in the 12th century. It stands on Lyme Brook, 16 m. N.N.W. of Stafford. Principal buildings include the ancient parish church of S. Giles (fourth on present site); an 18th-century guildhall; and a 19th-century

municipal hall. The university college of N. Staffs. opened 1950. is at Keele near by. In the borough are collieries, brick and tile works; it also makes cotton and clothing, and paper, and has light engineering works. Newcastle was won by

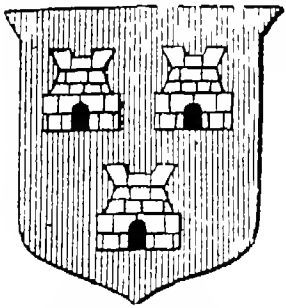
Simon de Montfort from Henry III; it reverted to the crown in 1265, passed to Edmund, created earl of Lancaster, to which and the later duchy it remained attached. Chartered 1173, 1235, 1251, 1281, and 1590, it had two M.P.s 1354-1885; with the rural dist. of Newcastle-under-Lyme it forms a bor. constituency; it also gives his title to the duke of Newcastle. Bradshaw was recorder of Newcastle. Market days Mon., Fri., Sat. Pop. (1951) 70,036.

**Newcastle upon Tyne.** River port, city, and co. of itself in Northumberland, England. It is



Newcastle-under-Lyme arms

the centre of a large coal mining, shipbuilding, industrial, and agricultural area, and stands 8 m.

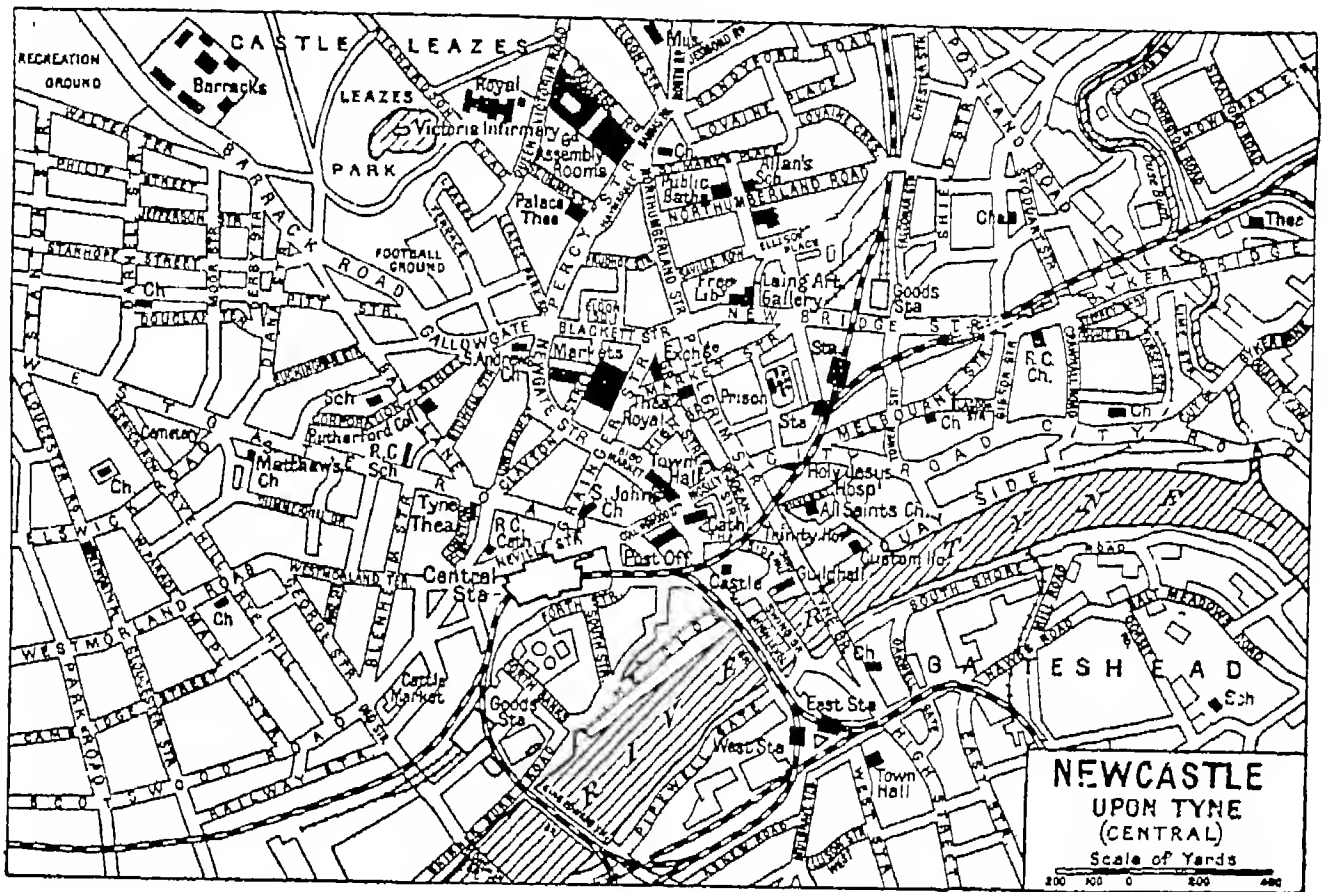


Newcastle upon Tyne arms

from the sea, on the N. bank of the Tyne. Geographically it is the natural outlet for much Northumbrian agriculture. To facilitate shipping, the Tyne commission

undertook from 1861 its great work of deepening and improving the river. Newcastle's main expansion has been to E. and W., owing partly to the transport facilities of the river. Its industries, apart from coal and shipbuilding, include engineering works, electrical works and power distribution, chemicals, grindstones, and the manufacture of lead and of copper alloys. There are markets for corn, hay, and straw, cows, fish, vegetables, etc.

Seven bridges cross the river: Tyne, 1928; High Level, 1846-49; Swing, 1876; Redheugh; Scotswood suspension; Scotswood (rly.); King Edward VII (rly.). Of bridges crossing the valley of the Ouse-



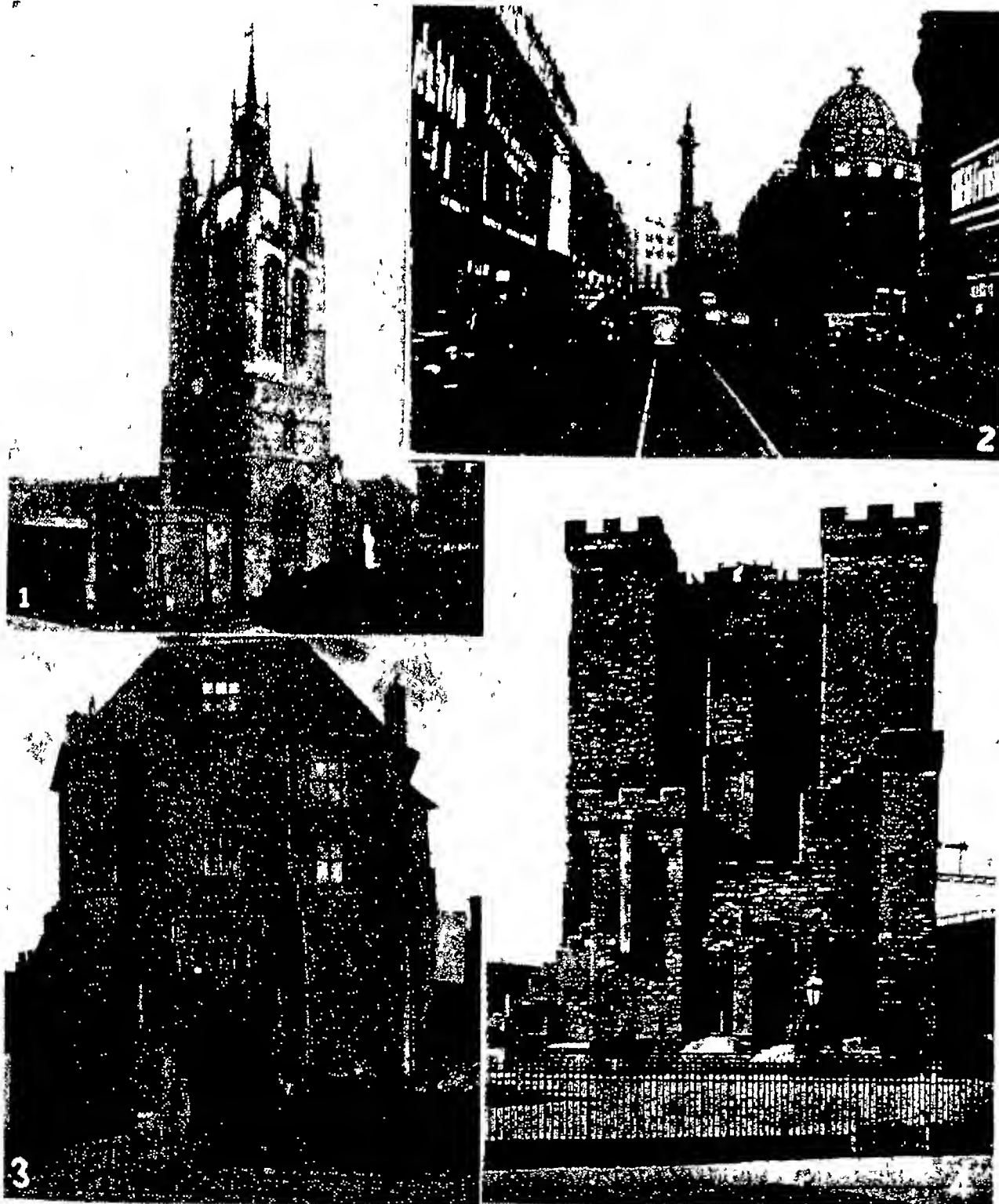
Newcastle upon Tyne, Northumberland. Plan of the central districts of the city, including a part of Gateshead

burn, Byker (rly.) and Armstrong Bridges are conspicuous. The Roman bridge, Pons Aelii, was where the swing bridge now is. Open spaces and parks are extensive, e.g. Town Moor (927 acres), Nuns Moor, Castle Leazes, Leazes Park, Exhibition Park, in the N.; Jesmond Dene, Armstrong,

Heaton, and Walker Parks, in the E. and N.E.; Elswick, Hodgkin, and Scotswood Parks, in the W.

S. Nicholas church, a cathedral since 1882 and a bishop's seat, is on the site of a church of 1091, which was rebuilt 1172-78, but burnt down 1216; the rebuilding was completed 1350, and the lantern tower added about 1450. S. Andrew's and S. John's contain parts dating from the 12th century. Other conspicuous churches are All Saints, S. George's, S. Matthew's, and S. Mary's R.C. cathedral. The Great Tower, or keep, of the castle, and the Black Gate, 1247, and its museums, are held by the Society of Antiquaries.

King's College for medicine and science, in the university of Durham, is in the city. Schools include Rutherford grammar and high schools, Heaton grammar and high schools, Royal grammar school, Central high school, Newcastle high school, S. Cuthbert's R.C. grammar school, etc. Music is fostered by the Newcastle and Gateshead choral union, musical tournaments being held annually. The Institute of Mining Engineers, the N.E. Coast Institute of Engineers and Shipbuilders, the Society of Antiquaries, the Classical Association, and the Historical Association watch over other interests. Public libraries contain nearly 300,000 books, MSS., etc.; the art gallery (1904) has loan exhibitions; the Literary and Philosophical Society (1793) has its library, lecture hall, etc., near the central station. Its History, by S. Watson, 1897, illuminates local life. The Royal Victoria Infirmary, 1906, replaces the old infirmary, 1752. Trinity House (hall, chapel, almshouses) is in Trinity Chare, just off Quayside.



Newcastle upon Tyne. 1. West front of S. Nicholas cathedral. 2. Grainger Street, the city's principal thoroughfare, with the monument to the 2nd Earl Grey in the centre. 3. Black Gate, the 13th-century entrance to the castle. 4. The Keep of the castle. See also Bridge illus., p. 1424



With the urb. dist. of Newburn, Newcastle upon Tyne forms 4 bor. constituencies. The chief magistrate has since 1906 been styled lord mayor. The mayoralty dates back to 1216; the shrievalty to 1400. There are 19 aldermen and 57 councillors.

Newcastle became a point on the Roman Wall when Hadrian in 120 built his bridge (Pons Aelii) and camp. The town had no importance until William I's sons established the fort known from 1080 as the New Castle. The Scots held it during Stephen's reign, but Henry II recovered it, built a castle, the keep of which still remains, and granted a charter. John confirmed the latter in 1201, and added the right to have a merchant guild in 1216. Strong new walls and towers, parts of which still remain, were built in Edward I's reign.

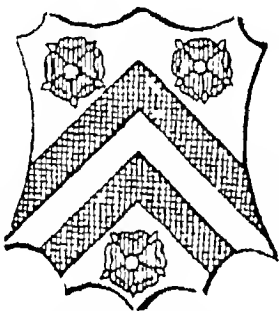
In 1320 Newcastle became the northern staple port for wool. By 1342 the newer trade and craft guilds had won a share in the town's government; fifty years later was established the Fraternity of Trinity House, which lighted and buoyed the Tyne, and exacted shipping dues. By the charter of 1400 Newcastle became a county in itself, and Elizabeth's great charter of 1600 confirmed the old privileges and added new ones. Meanwhile the coal trade, both home and foreign, had greatly expanded. In the Civil War, Newcastle favoured the royalists, and in 1644 was besieged and captured by the Scots. The shipbuilding trade added to Newcastle's prosperity; as also, from the 17th to the late 19th century, did glass-making. Here are the administrative offices of the national insurance department. Pop. (1951) 291,723. *Consult* History of Newcastle and Gateshead, R. Welford, 3 vols., 1885-87.

**New Church.** Religious denomination which accepts the claim of the Swedish scientist and mystic Emanuel Swedenborg, that in 1744-45 he was granted insight into the spiritual world by direct revelation. Organized as a society in 1787 by Robert Hindmarsh (1759-1835) of Clerkenwell, it has 75 societies with about 6,700 members in Great Britain, and is represented on the Continent and in the U.S.A. The Bible is interpreted as having both a literal and a spiritual sense; while all things in the material world have their counterpart both in heaven and in hell. "All religion has relation to life; and the life of religion is to do good." Literature is published

by the Swedenborg Society, 20, Bloomsbury Way, London, W.C.1.

**Newchwang** OR YINGKOW. Chinese seaport, in Liaoning prov., Manchuria. Although by the treaty of Tientsin, 1858, a treaty port was created at Newchwang, it was Ying-kow, 14 m. up the river Liao, which became the centre of foreign settlements and to which Europeans generally refer by the name of Newchwang. It is connected with the S. Manchuria rly., linking Mukden and Dairen (Dalny), and with the Peking-Mukden railway. Ice-bound for three months in the year, it has declined in importance since the opening of Antung and the development of Dairen. Occupied by the Japanese in 1932, it was under the sovereignty of the puppet state of Manchukuo until the conclusion of the China-Japan conflict in 1945. Extraterritorial rights were abrogated by Great Britain and the U.S.A. in 1943. Pop. 82,000.

**New College.** College of Oxford university. It was founded in 1379 by William of Wykeham, as the college of S. Mary of Winchester, but soon became known as New College. It was intended for boys from Winchester College, and this connexion has been maintained, some scholarships being still reserved for Winchester. Two fellowships are held by professors known as Wykeham professors. The head is the warden. The college, one of the largest in the university, has a beautiful garden, bounded by the only perfect remaining part of the city wall. There are a large hall, cloisters, and a tower. The fine chapel contains the pastoral staff of the founder and stained glass by Reynolds. New buildings face Holywell Street. The college maintains a choir school, and the rendering of evensong each day during term is celebrated.



New College, Oxford, arms

New College, Hampstead, a theological training centre for Congregational ministers, is affiliated to London university.

**Newcomb, SIMON** (1835-1909). American astronomer. Born March 12, 1835, in Nova Scotia, he went



Simon Newcomb, American astronomer

to the U.S.A., 1853, and in 1857 took part in calculating the tables of the American nautical almanac. By 1861 he was professor of mathematics in the navy. He was secretary

of the transit of Venus commission, 1871-74, director of the nautical almanac, 1877-97, and professor of mathematics at Johns Hopkins university, 1884-94. His revision of the lunar and planetary tables resulted in the simplification of nautical almanacs of the world. He received the gold medal of the Royal Astronomical Society, and Copley medal of the Royal Society. His autobiography, *Reminiscences of an Astronomer*, appeared in 1903. He died July 11, 1909.

**Newcomen, THOMAS** (1663-1729). English engineer, born at Dartmouth. About 1705, with financial help from John Colley or Cawley, he constructed an improved form of Savery's steam engine. Newcomen's machine was an atmospheric (steam condensing) pumping engine, and was used about 1710 to raise water from mines near Dudley. It remained the standard model until the improved model of Watt, c. 1765.

**Newcomes, THE.** Novel by W. M. Thackeray, published in 1855, with the full title *The Newcomes*:



New College, Oxford. Front quadrangle, showing, left, the hall and muniment tower

*Memoirs of a Most Respectable Family*, edited by Arthur Pendennis, Esq. It was issued first in monthly parts, illustrated by Richard Doyle. A study of middle-class social life in the first

half of the 19th century, it includes several autobiographical touches, and has in Colonel Newcome one of the best remembered of Thackeray's characters.

**New Corinth.** Town of Greece. It was founded in 1858, 3 m. from the site of ancient Corinth, destroyed that year by earthquake, and has progressed since the Corinth ship canal was cut through the isthmus in 1893. It has a good harbour, and exports currants. *See* Corinth.

**New Cross.** District of S.E. London. In the bor. of Deptford, it has rly. and underground rly. stations. It is a populous area between Peckham on the W. and Greenwich on the E. New Cross Road connects Old Kent Road with Queen's Road, Peckham, and Deptford Broadway. Near the junction of New Cross Road and Lewisham Way is Goldsmiths' College. For damage during the Second Great War, *see* Deptford.

**New Cut.** Former name of a London thoroughfare, now The Cut. It connects Lambeth Lower Marsh and Waterloo Road with Great Charlotte Street and Blackfriars Road, S.E. Notable for its brokers' shops, street stalls, and Sunday trading, it shared with Lambeth Marsh a somewhat unenviable reputation, dating from the days of Massinger. At the Waterloo Road corner stands the Royal Victoria Hall, formerly the Royal Coburg Theatre. Better known as the Old Vic (*q.v.*), this, damaged during the Second Great War, was closed 1940-1950.

**New Deal.** The popular name for the policy of F. D. Roosevelt at the opening of his first term as U.S. president, 1933. He coined it during his election campaign to indicate an attitude rather than any specific plan; it suggested that the "little man" was going to be given more chance. It came to denote a definite legislative programme for each emergency as it arose, with measures for (1) relief, such as the Works Progress Administration and the Social Security Act; (2) recovery, such as the National Recovery Administration and the Agricultural Adjustment Administration; (3) reform, such as the Federal Housing Administration, the National Labour Relations Act, and the T.V.A.

**New Delhi.** Official name for the capital of the Union of India. *See* Delhi.

**Newdigate, SIR ROGER** (1719-1806). British antiquary. Born at Arbury. Warwickshire, May 30,

1719, and educated at Westminster and University College, Oxford, he succeeded his brother as 5th baronet, 1734.



Sir Roger Newdigate,  
British antiquary  
*After Romney*

He was M.P. for Middlesex, 1741-47, and for Oxford university, 1750-80. Sketching in early youth old French and Italian architecture, he afterwards travelled in quest of marbles and other antiquities. He presented some to his college and the Radcliffe library, besides contributing £2,000 for transferring to Oxford the Arundel marbles, now in the university galleries there. He died Nov. 23, 1806.

**Newdigate Prize.** Award for the best poem on a given subject awarded each year to an undergraduate of the university of Oxford. It was founded in 1806 by Sir Roger Newdigate, and is worth 21 gs. Dean Stanley, Ruskin, Matthew Arnold, Sir Edwin Arnold, Wilde, and Laurence Binyon are among those who have won it.

**Newel** (old Fr. *nouvel*, kernel). In architecture, term originally denoting the central post or pillar of a spiral staircase. It is now extended to the angle posts in a straight staircase. The newel is a feature of the massive Jacobean staircase, in which it is crowned by a handsomely carved finial or by a statue.

**New England.** Name given to certain N.E. states in the U.S.A., formerly belonging to Great Britain. They are Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, and their inhabitants, descended from Scottish Presbyterians and English Puritans, are familiarly styled Yankees. The coast was explored in 1583 by Sir Humphrey Gilbert, and in 1614 by Capt. John Smith, to whom the name New England is due. The Plymouth colony was established in 1620 in Massachusetts, and in 1643 a confederacy known as the United Colonies of New England was formed by the federation of New Haven, Connecticut, Massachusetts Bay, and Plymouth colonies, annual and later triennial sessions being held. Area, 66,608 sq. m. Pop. (1950) 9,314,453. *See* Pilgrim Fathers, and articles on states.

**New England Range** OR NEW ENGLAND PLATEAU. Mountainous area of Australia, in New South Wales. It is the N.E. section of the

plateau which crosses New South Wales roughly parallel to the coast. The E. face is a steep scarp separated from the Pacific Ocean by a coastal plain; on this side the Clarence, Richmond, and Tweed rivers flow between outlying parts of the plateau, such as the Richmond Range. To the W. the plateau drops in gentler slopes. Ben Lomond and other peaks attain to a height of about 5,000 ft.

**New English Art Club.** British body of painters. Founded in 1885 in opposition to the Royal Academy, it furthered the aims of the younger school of painters at a time when Impressionism was little understood or appreciated in England. Its council was elected by members, of whom Steer, Sickert, and Tonks later became famous. It remained a force in England until the advent of the Post-Impressionists shortly before the First Great War. Though many of the more revolutionary artists joined the London Group during the 1920s and 1930s, the "New English" continued to exert influence.

**Newent.** Market town and parish of Glos, England. It is 10 m. N.W. of Gloucester, and has some small manufactures. The church, dedicated to S. Mary the Virgin, is an old foundation, for the most part rebuilt; it contains old monuments. There are mineral springs. Market day, Tues. Pop. (1951) parish, 2,912.

**New Forest.** Woodland dist. of S.W. Hants, England, giving its name to a co. constituency. Between Southampton Water and the Avon, it has an area of about 144 sq. m. or 93,000 acres. It is about 16 m. from E. to W. and 14 m. from N. to S. The chief towns therein are Lyndhurst, Brockenhurst, Ringwood, and Minstead. The forest is watered by the Beaulieu and other streams. It contains the ruins of Beaulieu Abbey, and at Stoney Cross is the stone which marks the spot where William Rufus was killed. The chief trees are oak and beech. There are some deer in the forest, which has also a breed of ponies. Brockenhurst and Ringwood have rly. stations.

Much of the land, about 63,000 acres, is the property of the crown, and to look after it there are a surveyor, verderers, and other officials, while forest courts are still held. The creation of the forest is usually ascribed to William the Conqueror, but probably he merely reserved for himself an area already forest. *See* Hampshire; *consult*



The New Forest, E. Godfrey, 1912; W. F. Rawnsey, 1915; The Commoners' New Forest, F. E. Kenchington, 1944.

**Newfoundland AND LABRADOR.** Province of Canada: a British dominion 1917-34. The prov. includes, besides the island of Newfoundland (area 42,734 sq. m.), which lies in the N. Atlantic off the Gulf of St. Lawrence, about 110,000 sq. m. of Labrador (*q.v.*). The population of the province in 1956 was 415,074.

The most northerly point of the island is at the straits of Belle Isle, which are about 7 m. wide and divide Newfoundland from the mainland. The island's maximum length and breadth are both 320 m., and it is roughly triangular in shape. Larger than Ireland, it is the tenth largest island in the world. From its most E. point to the most W. point of Ireland is 1,640 m. At Heart's Content the Great Eastern landed the Atlantic

cable in 1867, and within a few miles of the same point the first successful air flight (by Alcock and Brown) started across the Atlantic in June, 1919.

The coast-line of Newfoundland is much indented, giving it a total length of some 6,000 m. Conception, Trinity, Bonavista, and Notre Dame bays are extensive arms of the sea on the E. and N. coasts; Fortune and Placentia bays on the S. contain between them the Burin pen. Bay of Islands and St. George bay are on the much less broken W. coast, White bay on the N.E., and St. Mary's bay on the S. The islands of St. Pierre (*q.v.*) and Miquelon (*q.v.*), 15 m. off the S. coast, belong to France.

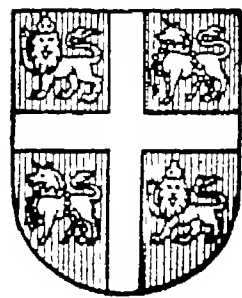
Most of the hills are near the coast. The Long Range runs for about 200 m. along the W. sea-board. Between these and the coast on the S.W. is the Anguille Range. The range of hills near Bonne bay reaches 2,673 ft. St. John's with a pop. (1956) of 57,078 is the capital and the largest town. Other towns (1951) of more

than 2,500 inhabitants were Corner Brook West (6,831); Wabana (6,460); Windsor (3,674); Curling (3,559); Carbonear (3,351); Corner Brook East (3,445); Deer Lake (2,655); Channel - Port aux Basques (2,634). Placentia was the capital of the part of the island that once belonged to France. Around the coast are many fishing villages.

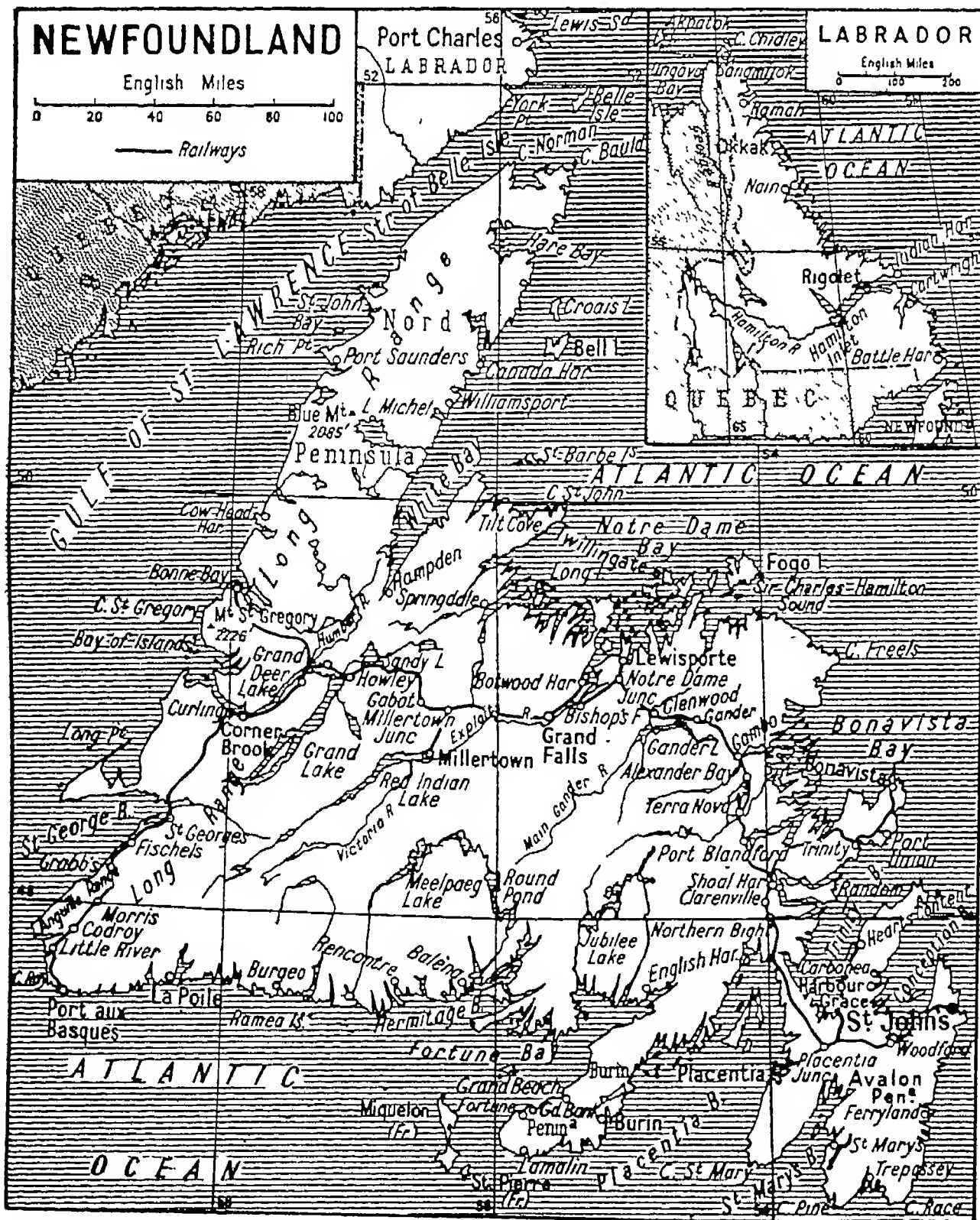
The dist. of Grand Falls owes its origin and prosperity to the pulp and paper mills established in 1910 by the Anglo-Newfoundland Development co., created by Viscount Northcliffe, and his brother Viscount Rothermere. Botwood, near the mouth of the Exploits river, is the summer port of the co. Corner Brook West, second largest town, was inaugurated in 1923 with the construction of a paper mill; there are also paper and pulp mills at Bishop's Falls. There are trans-Atlantic airports at Botwood and Gander (*qq.v.*).

Newfoundland has a remarkable area of fresh water, one-third of its surface being covered by lakes and rivers. Longest rivers are the Exploits, Humber, and Gander. The Exploits rises among the hills of the S.W., and, after flowing through wooded country for about 200 m., falls into the bay of Exploits, an opening of Notre Dame bay. On it lies Grand Falls. Thwart I. is the largest of many in its channel. The Humber passes through Deer lake into Bay of Islands. The Gander drains Gander lake on its way to Hamilton Sound. The largest of several lakes is Grand lake, 56 m. long, with an island 22 m. in length.

Compared with that of the interior of Canada, the winter climate of Newfoundland is mild and damp, the Feb. temperature at St. John's averaging 23° F. The influence of the cold Labrador current results in summers which are decidedly cool for these lats.; e.g. in Aug. the average temperature rarely exceeds 60° F. The well-known fogs of the Grand Banks are due to the warm moisture-laden air from the Gulf of Mexico moving over the Arctic Labrador current whose icebergs are carried S. to melt in the warmer water. As the temp. of the tropical air mass may be 30° F. above that of the surface of the polar water, there is pronounced cooling of the lower layers of the air. The resulting fogs extend upwards for only a few hundred ft. but are unusually dense and persistent. The summer and autumn are the foggiest



Newfoundland arms



Newfoundland. Map of this island off the continent of N. America, part of Canada since 1949. Inset, the Labrador coast, which forms part of the province of Newfoundland and Labrador

seasons ; during the former months air from the heated adjoining continent also produces fogs over the cold seas. Around the coasts of Newfoundland fogs occur on about 70 days a year ; in the Belle Isle strait, to the N., their average frequency rises to 120.

Newfoundland is first and foremost a fishing country, there being apparently unlimited cod and herring in Newfoundland waters, the most productive area in the W. Atlantic. It has also important paper and wood pulp industries, and also produces iron, lead, zinc, copper, and fluorspar. Value of exports of forest products in 1945-46 was about £725,000, of minerals nearly £2,000,000. Reserves of iron ore are estimated as 3,500 million tons. In 1945-46 the value of the exports of fishery products was nearly £6,000,000. Besides cod and herring the fish taken included lobster, hake, turbot, haddock, salmon, trout, halibut, and eel. Fishing is carried on around the coasts of the island, on the Labrador coast, and on the Banks—submarine areas 200 m. from the Newfoundland coast—from April to Jan., and on the S. coast of Newfoundland all the year round. The seal fishery—which takes place annually on the ice floes—is valuable ; it was resumed in 1946 after being abandoned 1939-45.

#### Scientific Aid to Fisheries

A govt. research lab. advises on many trade and marine biological subjects. A laboratory research boat operates principally in the vicinity of the Grand Banks. Fourteen govt. bait depots produce nearly 7,000,000 lb. of bait fishes. There are quick freezing and cold storage plants on the coast ; 32 million fresh frozen cod fillets were exported in 1946 ; 950,000 quintals of salted cod fish were exported in the same year. Newfoundland is represented on the Atlantic herring investigation committee.

There are 90 registered co-operative organizations, and the govt. assists agricultural societies by importing for distribution pure bred bulls, dairy cows, rams, ewes, and boars. Newfoundland has c. 700,000 acres of first class agricultural land, c. 3,000,000 of second class ; but agriculture is not well developed.

**HISTORY.** Newfoundland was discovered by John Cabot on June 24, 1497, an achievement which earned for him from King Henry VII the sum of £10. In 1498 Cabot made a second expedition to Newfoundland. In 1500 the Portuguese, under Gaspar de Cortereal,

discovered and named Conception bay and Portugal cove. From 1521 Portuguese, Spanish, French, Basque, and English fishermen carried on fishing for cod. In 1527 the first attempt to found a colony was made by Robert Thorne, of Bristol. In 1578 the number of fishing boats using Newfoundland waters had reached 400, of which only 50 were English.

#### Earliest Settlement

On Aug. 5, 1583, Sir Humphrey Gilbert formally annexed Newfoundland to England. The next attempt at colonisation on a large scale was by one Guy, a merchant of Bristol. A patent was granted to the earl of Northumberland, keeper of the privy seal, Sir Laurence Tansfield, baron of the exchequer, and Sir Francis Bacon, incorporating them under the name of treasurers and company of adventurers of the city of London and Bristol for the colony and plantation of Newfoundland. This colonisation by Guy was the first permanent settlement in Newfoundland, and the first settlement by the English in any part of what is now the British Commonwealth.

In 1615 Captain Whitbourne, of Devon, was sent to Newfoundland by the high court of admiralty to correct abuses which had sprung up in connexion with the fisheries. On his return he wrote the first history of Newfoundland. In 1623 Sir George Calvert, afterwards Lord Baltimore, obtained a patent from James I giving him the whole of the pen. of Avalon, and settled at Ferryland, near Cape Race.

In 1626 as many as 150 vessels came from Devon to the Newfoundland fisheries. In 1630 a regular code of laws was issued by Charles I to govern these fisheries, and five years later the French received permission to dry fish along the coasts. In 1650 there were only 2,000 inhabitants in the fifteen harbours then settled. In 1654 further colonists arrived from England, under Sir David Kirke, and in 1660 the town of Placentia was founded by the French. By a regulation of 1663, masters of vessels were prohibited from carrying any settlers to Newfoundland, and merchants doing business there petitioned the king against sending out a governor.

In 1697, under the treaty of Ryswick, the French were left in possession of a considerable settlement on the S.W. coast. In 1713, by the treaty of Utrecht, the whole island was ceded by France to England, but France retained certain fishing rights, out of which

innumerable disputes arose. These were settled by the Anglo-French convention of 1904 under which France renounced her claim to exclusive fishing rights, but retained the right to fish in territorial waters from St. John's cape northward and round Cape Ray.

In 1792 the supreme court of judicature was established in Newfoundland, and in 1809 jurisdiction over Labrador was transferred from Canada to the government of Newfoundland. In 1811 permission was first granted to erect permanent houses, and in 1813 the first grants of land were made by Governor Duckworth. In 1818 a fishery treaty was made with the U.S.A., under which disputes arose. These were settled by arbitration at The Hague, in 1910, Great Britain securing the right to make fishing regulations without consulting the U.S.A. and also the confirmation of her contention that the whole extent of a bay from headland to headland is territorial waters.

#### Constitution and Government

Newfoundland was first granted representative government in 1832, and responsible government in 1855 by a constitution under which administration was by a crown-appointed governor and an executive council responsible to an elected legislative assembly of 27 and a legislative council of 24 nominated by the governor for life. 1865 saw the first geological survey of the island. In 1869 took place an election, by which the party favouring confederation with Canada was defeated by a very large majority at the polls. In 1871 the garrison of British troops was withdrawn from Newfoundland. In 1880 took place the turning of the sod for the first railway, E. to W., which, by the addition of various branches, now extends over 1,000 m. At the W. terminus of the route is Port aux Basques, 60 m. from Sydney, on Cape Breton island ; fast steamers connect the terminus with that port.

Newfoundland was made a dominion at the Imperial conference of 1917 ; but by 1933 the island's financial situation had become critical. A royal commission of investigation appointed by the U.K. government recommended that the constitution be suspended ; and this was done by an Act of the U.K. parliament, 1933. From Feb. 15, 1934, to April 1, 1949, the territory was administered by a governor assisted by a commission of six crown-appointed members, three from Newfoundland, three



from the U.K. An elected national convention met in 1946 to make recommendations about future forms of government. These were submitted in 1948 to a referendum, which gave a majority of 6,556 in favour of confederation with Canada. On April 1, 1949, Newfoundland duly became a Canadian province. Constitutional government under a lieut.-governor was restored. The province sends six senators and seven members of the house of commons to the Canadian parliament.

Newfoundland gave generously in men and money during the two Great Wars. In the First, nearly 12,000 men enlisted in the British forces, besides 3,000 who joined the Canadian army; the Royal Newfoundland regt. fought at Gallipoli and in France. In the Second Great War, two artillery units were recruited as part of the British army; one served with distinction in N. Africa and Italy; the other fought on the western front, being the first heavy regt. to cross the Rhine. Three thousand Newfoundlanders joined the Royal Navy, more than a thousand the merchant navy; others served with the British and Canadian air forces; it was estimated that more than a quarter of the male population of military age saw service abroad. More than 500 women enlisted in the Canadian forces. A forestry corps was raised in both wars and rendered valuable service in Great Britain.

In November, 1940, began the development of Newfoundland as the western terminus of the Atlantic air ferry; a huge airport was developed at Gander, from which aircraft were flown from U.S. and Canadian factories direct to Great Britain; after the war Gander became a staging point on the regular trans-Atlantic route. Sites in Newfoundland were granted on a 99-year lease to the U.S.A. in Jan., 1941, under the British-U.S. agreement of Sept., 1940, for development as air and naval bases, and the presence in the island during the Second Great War of large U.S. forces brought it a prosperity it had never known before. *Pron.* Newfund-land.

**Bibliography.** Newfoundland: Royal Commission Report, 1933; Newfoundland: Sentinel of the St. Lawrence, S. A. Saunders and Eleanor Back, 1943; Newfoundland, the Forgotten Island, Ammon, 1944; Outlines of Geography, Life and Customs of Newfoundland-Labrador, V. Tanner, 1944; Atlantic Bridge, Official Account of R.A.F. Transport Command's Ocean Ferry, 1945; History and Economy of Newfoundland, R. A. McKay,

1946; Report on the Financial and Economic Position of Newfoundland, 1946; Newfoundland, 10th Province of Canada, J. Parker, 1950; Histories: C. Pedley, 1863; D. W. Prowse, 1897; T. G. Taylor, 1946; J. A. Cochrane and A. W. Parsons, rev. ed. 1949.

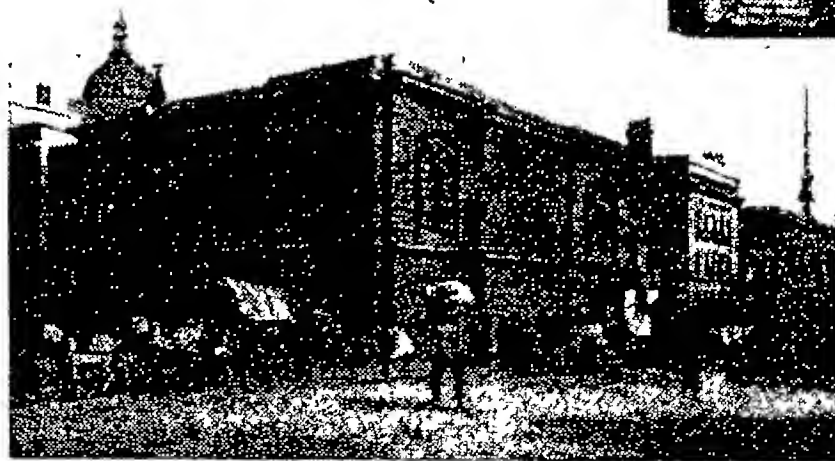
**Newfoundland Dog.** Breed of dog introduced into the U.K. from Labrador (where it was used



Newfoundland Dog. Champion Gipsy, a prize specimen of the breed

as a water dog and sea rescuer) about 1800, but probably originating in Europe. One of the largest breeds of dog, it is massive, strong, and active, with a broad head, short and square muzzle, small dark brown eyes, and small ears without fringes, lying close to the head. The body is deep with broad back and chest, strong legs, large feet, and uncurled tail of moderate length. The coat is flat, dense, and coarse, with an oily texture and is very resistant to water. The colour may be a dull black, with which a slight tinge of bronze or white on the chest and toes is allowed; other than black, the most approved colours are white or bronze.

The Newfoundland is gentle, docile, and affectionate. Lord Byron's Boatswain is probably the most famous dog of this breed. Size and weight are important, and must be combined with symmetry. The average height for dogs is 28 ins.; average weight is 140-150 lb. Bitches should be two inches less and weigh 110-120 lb.



Newgate, London. The old gaol, from the church of S. Sepulchre, showing corner of Newgate Street and the Old Bailey, from a print of 1800. Top, right, New Gate, a 17th century view of the City gate, which once served as a prison

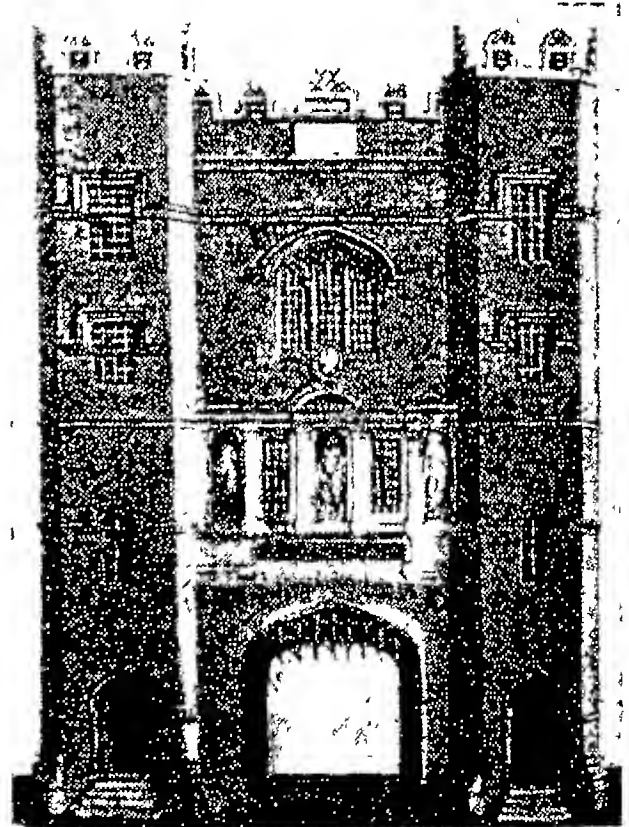
**Newfoundland Regiment, ROYAL.** Regiment recruited in Newfoundland in 1914, which served in Gallipoli and France. It was granted the prefix Royal in 1918, and disbanded in 1919. In 1940, another Newfoundland unit, the 166th (Newfoundland) Field Regiment, Royal Artillery, was raised in the Dominion for service in the Second Great War. It went to N. Africa in 1943 and served throughout the Tunisian campaign and in Italy, France, and Germany. It was disbanded in 1946.



Newfoundland Regiment badge

**Newgate.** Former gaol in the city of London. A gaol stood on the same site for almost 1,000 years, and records go back to the time of King John. The prison was then in the gate house, i.e. New Gate, as was the rule in medieval times.

A new prison was begun in 1420, burnt down in 1666, rebuilt upon the same lines, and again rebuilt 1778-80, only to be partly destroyed by fire during the Gordon Riots, 1780. Reconstructed in 1857, the gaol was taken over by the government from the city authorities in 1877; three years



later it ceased to be a place of detention, and in 1903-04 was demolished, its site being now occupied by the Central Criminal Court.

In 1783 the public gallows were removed from Tyburn to the outside of Newgate, and there executions took place until 1868, when an Act ordered all

hangings to be carried out within the walls of prisons. The last man to be hanged in front of Newgate was the Fenian, Michael Barrett, May 26, 1868, and the last criminals executed within its walls were Milsom and Fowler, 1896. Vast crowds assembled to see the executions, and large sums were paid for seats. *Consult* Chronicles of Newgate, A. Griffith, 1884; Trials from the Newgate Calendar, 1907.

**New Glasgow.** Town of Nova Scotia, Canada. It stands on the East river, 105 m. N.E. of Halifax, and 3 m. from the coast at Pictou Harbour. There are large coal mines in the neighbourhood, and the industries include iron and steel works, a car company, and works for making bricks, tools, etc. A branch line of the C.N.R. carries the coal for export to Pictou Landing. Pop. (1951) 9,933.

**New Goa** (Port. Nova Goa). See under Goa.

**New Grange.** Chambered tomb dating from c. 2000 B.C., in the Boyne valley, co. Meath, Ireland. It is a round cairn 315 ft. across and 40 ft. high, and was originally covered with blocks of white quartz. It has a kerb of megaliths and is surrounded by a circle of menhirs (originally 36, of which 12 remain). A 63-ft. gallery leads to a corbelled chamber 20 ft. high, with three cells arranged to form a cross. A number of the stones are carved with spirals and other designs. There are other, smaller, burial mounds in the neighbourhood.

**New Guinea.** An island of the Pacific Ocean. Situated just south of the equator, it lies in the East Indian archipelago and belongs physically to the islands which festoon the N.E. coast of Australia, from which New Guinea is separated by Torres strait. Covering an estimated area of 311,000 sq. m., the island consists of central and northern mountain ranges with lower hill country to the S. and alluvial valleys near the coasts. Some of the mountains have glaciers, Mt. Carstens (16,400 ft.), the highest point on the island, having two. The country is very rugged, with thick scrub and jungle. The tropical climate makes the island generally unhealthy for Europeans. Except in the immediate vicinity of the larger towns there are few roads; there are only foot-tracks in the interior, and the Australian and Japanese forces who fought in New Guinea during the Second Great War were working in unknown country. There are no

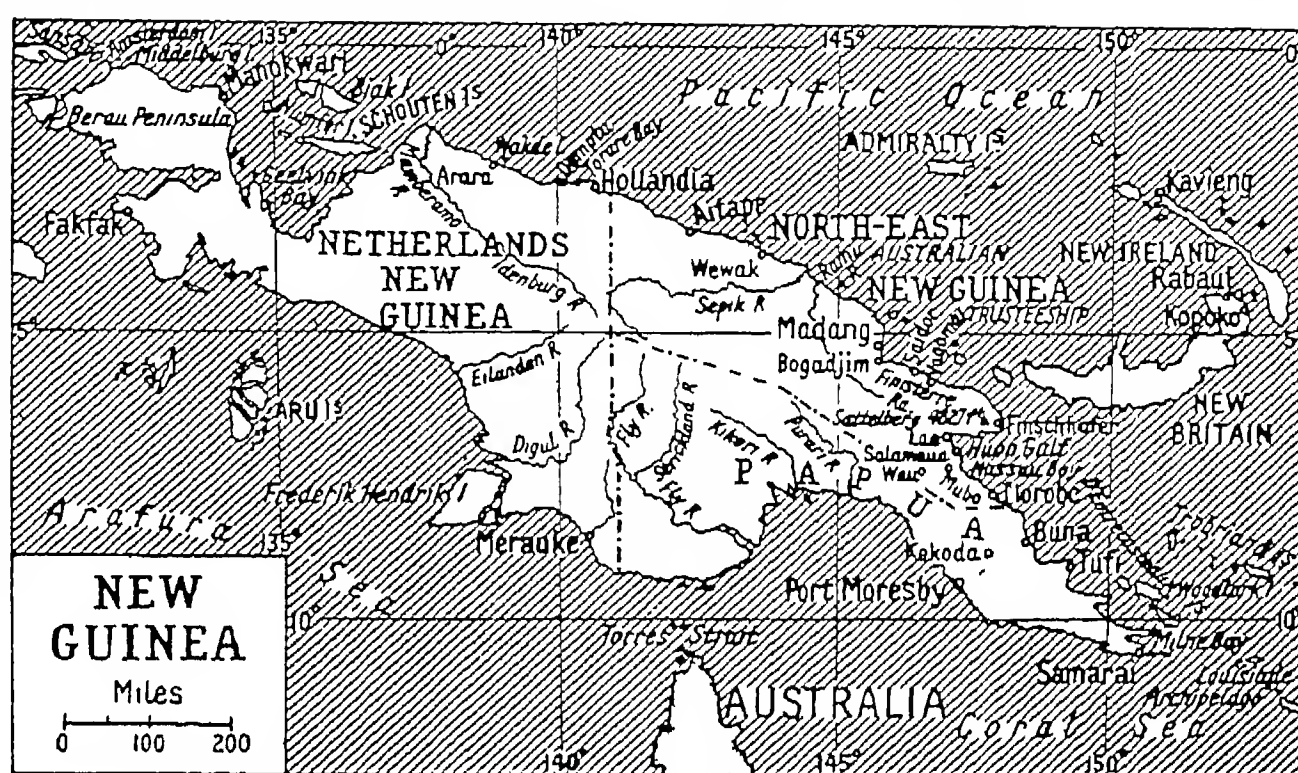
rlys., the principal means of communication between the towns, most of which are on the coast, being by sea. The Fly river is navigable for 500 m. by small vessels.

Although the flora and fauna are distinctly Australian in type, the native pop. is neither Asiatic nor Australian, but akin to the Melanesians of the neighbouring South Sea islands. The native pop. is estimated at 2,000,000, and there are some 8,000 Europeans and 2,000 Chinese. Coconuts, rubber, sisal, and cotton are produced and exported, and there are deposits of copper and gold, barely exploited.

Politically, New Guinea is divided into two main divisions.

lative council, nominated by the Australian administrator of Papua and appointed by the gov.-gen.

Under European rule, many of the former savage and head-hunting tribes have settled down to peaceful pursuits on the coconut and rubber plantations, some 200,000 acres of which are under cultivation. Papuan exports to Australia enjoy a preferential tariff, and to encourage local industry natives are obliged to plant their lands or establish communal plantations. Education is compulsory for native children where English-speaking schools are available, and a family bonus is paid to native mothers. Internal



New Guinea. Map of the largest island in the East Indian Archipelago

the eastern half being British, the western half Dutch. The British area is in two parts: Papua (Australian New Guinea) in the S.E., and N.E. New Guinea, held by Australia under U.N. trusteeship. Papua includes the islands of the d'Entrecasteaux and Louisiade groups and all other islands between lat. 8° and 12° S. and long. 141° and 155° E. Area 90,600 sq. m., including adjacent islands, 2,794 sq. m.; pop. (1955) 439,369 (non-indigenous 6,794).

The annexation of Papua by the govt. of Queensland in 1883 was not sanctioned by the British govt. Next year, however, a British protectorate was proclaimed, and in 1887 the govts. of Queensland, Victoria, and New South Wales undertook to defray administrative costs; the following year Papua was annexed to the crown. The Australian federal govt. took over control in 1901, and the territory of Papua was proclaimed in 1906. Local government is by an executive council of five to nine members, one of whom is chosen from the non-official members of the legis-

expenditure is met from local revenue, chiefly from a poll tax, assisted by a subsidy from the Australian govt. The principal town and port is Port Moresby, which is the centre of administration. There is a monthly steamer service, and a twice-weekly air service, to and from Australia.

The north-east part of New Guinea was acquired by Germany in 1884 and named Kaiser Wilhelmsland. Area (including islands, 23,000 sq. m.) 93,000 sq. m.; population (1955) 1,254,160 (non-indigenous 12,545). The Germans did little to exploit the country's natural resources, and did not explore far into the interior. The territory was occupied by Australian troops in Sept., 1914, and in 1920 was mandated to Australia by the League of Nations from May, 1921. Many of the tribes remain outside official control. Coconuts are the staple product, but there is little trade or industry. Rabaul, New Britain, capital of the mandated area until 1942, was so badly damaged during the Second Great War that administration was transferred to Port Moresby.



After the Japanese invasion early in 1942, civil administration in Papua and Mandated New Guinea was suspended and government transferred to the Australian military forces. In Oct., 1945, the territories were temporarily transferred to the control of a provisional administration of Papua and New Guinea pending a decision as to future administration of the mandated territory. In 1946, the United Nations accepted an agreement proposed by Australia placing (N.E.) New Guinea under U.N. trusteeship, and permitting Australia to undertake any defensive measures necessary. The agreement also established Australia's right to bring the territory into a customs or administrative union with other Australian-controlled territories.

**NETHERLANDS NEW GUINEA.** This comprises more than half the main island, and includes the Schouten Is. at the entrance to Geelvink bay. A treaty between Holland and England in 1660 gave the Dutch East India co. rather vague rights over the territory, to which the Dutch govt. succeeded, and Dutch sovereignty was admitted by the British in the convention of 1814. The coast was mapped with fair accuracy by A. R. Wallace and others during the 19th century. The interior has not been fully explored, though military operations in the Second Great War led to extensive journeyings in it. Mountains that have been named include the Arfak, Orange, Nassau, and Charles Louis ranges; the lower courses of the rivers Mamberano, Digul, Merauke, etc., are known, and close to Santani lake, scarcely known before, the Japanese constructed two airfields.

Much of the area is virgin jungle. The natives cultivate rice, sugar-cane, maize, and yams, but there is virtually no commerce or industry; the people generally live in a wild state. Marsupials, birds of paradise, emus, and trepang are typical fauna. Except in the vicinity of the Dutch settlements, of which Hollandia (developed by the Americans during the Second Great War), Merauke, Kaimana, Kokas, and Fakfak are the principal, there are no roads.

Netherlands New Guinea was administered from The Hague after the Second Great War; plans were made for the immigration of displaced Indonesian-Dutch from Indonesia in order to develop the agricultural and mineral resources

of the country; coal has been found. Area 150,000 sq. m. Pop. (est.) 1,000,000.

**SECOND GREAT WAR.** New Guinea was a main objective of the Japanese in the Second Great War as a base from which to invade Australia. Under the terms of the mandate, Australia was not allowed to fortify the mandated area. Japan occupied Rabaul (New Britain) and Kavieng (New Ireland) on Jan. 23, 1942. Using Rabaul as a base, Japanese landed on New Guinea on March 8 at Lae and Salamaua, and two days later at Finschhafen. An intended assault on Port Moresby was prevented by the naval battle of the Coral Sea (*q.v.*) in May. On July 21, however, some 2,500 Japanese landed at Gona on the N.E. coast of Papua and immediately began to advance across the Owen Stanley range towards Port Moresby, which they had frequently bombed.

#### Japanese Threat to Australia

The town was garrisoned by the Australian 6th and 7th infantry divs. A small Australian detachment stationed at Kokoda on the N.E. side of the range, the first to make contact with the enemy, fought a gallant delaying action; but it was almost impossible to reinforce the advance troops along the primitive tracks leading through the range, and by Sept. 15 the Australians were driven back to the Iorabaiwa Ridge, 32 m. from Port Moresby and the last defensive position before that town.

Meanwhile, another Japanese landing on Aug. 25 at Gili Gili, at the head of Milne bay in the S.E. of the island, had been beaten off, after four days' bitter fighting, by the R.A.A.F. and Australian infantry.

The difficulties in terrain which had prevented reinforcement of the Australians now told against the Japanese; and on Sept. 30 they were forced back from Iorabaiwa Ridge, the Australians launching a counter offensive with U.S.A.A.F. support which recaptured Kokoda on Nov. 2 after protracted and bitter fighting, and drove the Japanese from Gona on Dec. 9, from Buna Dec. 14.

These operations removed the immediate danger to Australia; they were also the first major defeat of the Japanese in jungle fighting, and ended the myth of their invincibility in this type of warfare. By Jan. 23, 1943, the Australians had completely cleared the enemy from Papua, and were advancing into the mandated

territory, where the Japanese held strong bases at Lae and Salamaua and many local positions. During Jan. there was a violent battle for Wau (administrative h.q. of the Morobe goldfields), which had remained in Australian hands, and the Japanese were repulsed. A Japanese convoy carrying 15,000 men to New Guinea was destroyed in the battle of the Bismarck Sea, March 1-3, and other reinforcements were continually intercepted, while Australian ground forces steadily pushed the Japanese back on Salamaua.

On June 30 U.S. troops landed at Nassau Bay, 11 m. S. of Salamaua, making contact with the Australians at Mubo, captured July 15. By Aug. 9 the Australians had captured Kela Ridge, overlooking Salamaua. On Sept. 4, Australian and U.S. troops landed at Lae; while U.S. parachutists, watched by Gen. MacArthur, landed in the Markham valley on the 5th and 6th. Salamaua was captured on Sept. 14, Lae two days later. On Sept. 22, new Allied amphibian landings were made near Finschhafen, captured by the Australian 9th infantry div. Oct. 2. With the capture of the airfields in this area, Allied control of Huon Gulf and the Vitiaz strait (between New Guinea and New Britain) was assured. Australian troops captured the 4,827 ft. Sattelberg on Nov. 26 and then began an advance along the coast, meeting at Vagomai on Feb. 11, 1944, U.S. troops who had landed at Saidor on Jan. 2.

#### Allied Victories

Other Australian troops had meanwhile been driving the Japanese from the Markham and Ramu valleys into the Finisterre range, which they crossed against fierce enemy resistance in Dec., 1943, to capture Bogadjim, April 14, Madang, April 24. Allied landings on April 22 at Aitape in mandated territory and in the Humboldt bay area in Netherlands New Guinea split the Japanese into sections. In mid-July one strong group trapped between Aitape and Wewak attempted to breakthrough to the coast, but was repulsed with heavy loss and driven back into the mts. Wewak itself was not captured until May 14, 1945, its harbour falling only on June 5.

The landing on April 22, 1944, by U.S. and Netherlands troops at Hollandia on Humboldt bay was followed by the capture of Hollandia (then a village) next day, of the Japanese airfields near Lake Santani on the 25th, and of

Hollandia airfield on the 27th. Netherlands civil administration was at once restored and extended as further areas were retaken. U.S. troops made new landings at Torare bay and Dempta on May 5, on Wakde I. and at Arara on May 17. Wakde was secured by the 19th; its good airstrip gave the Allies command of Geelvink bay, and on May 27 a U.S. force invaded Biak, one of the Schouten Is., where there was a fierce tank battle for the Mokmer airfield, captured on June 7. Biak was cleared, except for a few isolated groups of Japanese, by June 20. Noemfoor I. was seized July 1, and on July 30 the Allies landed at Cape Sansapor, near the western tip of New Guinea, the islands of Amsterdam and Middelburg being seized at the same time. The Japanese garrison by-passed at Manokwari surrendered only after the Allied occupation of Morotai on Sept. 17. There were no further major operations in Netherlands New Guinea.

The Japanese ceased fire in New Guinea, Aug. 22, 1945, Lt.-Gen. Adachi commanding the Japanese 8th army there surrendering at Wewak, Sept. 13, to Maj.-Gen. Robertson, commanding the Australian 6th div. See Pacific War. Consult New Guinea Gold, E. Demaitre, 1938; A Letter from N.G., V. Haugland, 1944; New Guinea Diary, G. H. Johnston, 1944; New Guinea Head-hunt, C. Mytengen, 1947.

**New Hampshire.** State of the U.S.A. It has a 19-m. stretch of coast on the Atlantic, and is bounded N. by Quebec, Canada, E. by Maine, S. by Massachusetts, W. by Vermont. One of the 13 original states, it has an area of 9,304 sq. m. Its uneven surface attains an alt. of 6,290 ft. in Mt. Washington, one of several peaks of the White Mts. which exceed 5,000 ft. These mts. form one system with the Franconia and Sandwich Mts., and include the highest points of the N.E. Appalachians. In this area are some leading skiing resorts.

The "granite state" is drained chiefly by the Merrimac in the centre, Androscoggin in the N., Connecticut on the W. frontier, Piscataqua on the S.E. border, and the Saco. These streams provide abundant water power for industry. There are some 1,300 lakes, the largest being Winnepesaukee. Agriculture, once the premier industry but now second to manufacturing, yields chiefly dairy products, livestock, and

poultry. Hay, maize, potatoes, oats, and fruit are cultivated. Manufactures include boots and shoes, cotton and woollen goods, paper and pulp, lumber, iron and steel products. Mica, feldspar, and beryllium occur. Three rlys. with a mileage of 1,086 serve the state. At Durham is the state university, founded 1866. Two senators and two representatives are sent to congress. Concord (the capital) is a smaller city than Manchester and Nashua. Pop. (1950) 533,242.

The first settlement was made in 1623, where Rye now stands. The district was part of a grant of land made to John Mason and named after his home county, Hampshire; other settlements had been planted, and a dispute began between the company of Massachusetts and Mason's heirs over the boundary. Charles II made New Hampshire a separate province in 1679, but up to the outbreak of the War of Independence disputes with Massachusetts continued. New Hampshire was the first colony in 1776 to establish a government independent of Great Britain. Consult History of N.H., H. H. Metcalf, 1926.

**New Harmony.** Market town of Indiana, U.S.A., in Posey co. It stands on the Wabash, on the Illinois border, 17 m. N.N.W. of Mount Vernon, and is served by rly. It was settled in 1814 by a German community of religious socialists known as New Harmonists, from whom it was acquired in 1824 by Robert Owen for a socialist experiment. After the Civil War it was visited by Audubon, the ornithologist, and Lyell, the geologist. During 1839-56 it was the h.q. of the U.S. geological survey. Pop. 1,390.

**Newhaven.** Seaport and urban dist. of Sussex, England. It stands at the mouth of the Ouse, which

divides the town, about 9 m. E. of Brighton, and has two rly. stations, town and harbour. The chief building is S. Michael's church, with Norman tower and chancel, restored and enlarged in the 19th century. Newhaven has a good harbour, covering about 30 acres, whence steamers go regularly to Dieppe and other ports, carrying passengers and goods. There is a coasting trade, while shipbuilding is an industry. Off the port is a good roadstead. Fishing and bathing are available.

Newhaven was called Meeching until in 1570 the Ouse changed its course from farther E. to enter the sea here. It soon became a prosperous port, and, after a period of decay, revived when the Dieppe service was inaugurated in 1843. Pop. (1951) 7,783.

**Newhaven.** Seaport of Midlothian, Scotland, since 1920 included in the city of Edinburgh. It stands on the S. side of the Firth of Forth, 2 m. N. of Edinburgh with a rly. station. It received its name from the harbour built here about 1490. Fishing is the principal industry.

**New Haven.** City of Connecticut, U.S.A., co. seat of New Haven co., second largest city, and chief seaport, of the state. It stands at the head of New Haven Bay, 4 m. from Long Island Sound, 70 m. N.E. of New York, on the New York, New Haven, and Hartford rly. (the yards of which here cover 900 acres), and has a municipal airport. The Quinnipiac, Mill, and West Rivers flow into the bay, and the port, formerly a whaling centre, receives coal, petroleum, and lumber, but ships little. New Haven is the seat of



Newhaven seal



Newhaven, Sussex, showing the harbour used for daily cross-Channel traffic



Yale university, Hopkins grammar school, Albertus Magnus college for women, and Arnold college.

Picturesque New Haven has a 16-acre green on which stand three notable churches built about 1815 (one inspired by S. Martin-in-the-Fields, London, England). Here are Yale university buildings and others of architectural or historic interest. The city makes hardware, electrical equipment, ammunition and firearms, clocks, packed meats, and cutlery.

A party of Puritans settled here in 1638, and established a theocratic community which was first called Quinnipiac, the name being changed in honour of Newhaven, Sussex, in 1640. The New Haven colony, augmented by other towns, was absorbed by the Connecticut colony in 1664. Captured and sacked by the British in 1779, New Haven was the joint capital of the state from 1701 to 1873, and was chartered as a city in 1784. Pop. (1950) 164,443.

**New Hebrides.** Group of islands in the Pacific Ocean. They lie between Santa Cruz Islands on the N. and the Loyalty Islands on the S., the Fiji Islands being on the E., and the Coral Sea on the W. The parallel of 15° S. crosses them. The principal islands of some 30 are Espiritu Santo, Malekula, Epi, Efate or Sandwich, Erromanga, Tanna, Aneityum, and Ambrym, and all are administered by British and French officials under the Anglo-French convention of 1906.

Wooded or covered with luxuriant vegetation, many of volcanic origin, some of the islands are mountainous with a moist, unhealthy climate. They produce copra, bananas, sugar cane, sago, rubber, tortoiseshell, sandalwood, and coffee. The import of ammunition and the import and distillation of spirits are prohibited. There are R.C. and Presbyterian missions on the islands, but cannibalism is not extinct. Trade is mostly with Sydney and New Caledonia. Discovered by Quiros in 1606, the islands were visited and named by Cook in 1774. The French in this condominium were the first to declare for De Gaulle, July 20, 1940. The area is about 5,700 sq. m.; pop., chiefly Melanesian, (est. 1950) 45,000.

**New Iberia.** City of Louisiana, U.S.A., the capital of Iberia co. It stands on the Bayou Teche, at the head of navigation, 130 m. W. of New Orleans, and is served by rlys. Manufactures include foundry and machine-shop products, railway wagons, and soap.

Sugar, cereals, and fruits are cultivated locally, and salt is also produced. New Iberia was settled by Spaniards in 1785, occupied by the British in 1816, and became a city in 1839. Pop. (1950) 16,467.

**Newington.** Name of a parish of the London bor. of Southwark, and of several other parishes in England. That on the Thame, 9 m. S.E. of Oxford, contains an ancient church, S. Giles's, with a 14th century tomb. Newington, Kent, 8 m. E. of Rochester, also has an old church, S. Mary's, a Decorated flint structure, with lofty Perp. west tower. At South Newington, a village 6 m. S.W. of Banbury, Oxon, the church of S. Peter contains some notable Norman, E.E., and Perp. work.

**Newington Butts.** London thoroughfare. Linking Kennington Park Road with Newington Causeway, Southwark, S.E., it contained the Metropolitan (Spurgeon's) Tabernacle, built 1860-61, rebuilt 1898, and destroyed by German bombs in the Second Great War; the memorial clock-tower and churchyard of S. Mary, Newington, a church demolished in 1876; and still has the modernised Elephant and Castle inn, once a coaching rendezvous. This gives its name to a congested road junction and a station of the Bakerloo tube railway. Near the inn Joanna Southcott (*q.v.*) set up a meeting-house. The name Newington Butts is derived from an old archery ground, and from that of a family once owning an estate here.

**New Ireland.** Island of the Bismarck Archipelago (*q.v.*). It is separated from New Britain by St. George's Channel. Long and very narrow, it is mountainous in the S. and level in the E. There are extensive forests, but the climate is unhealthy. The natives are of Melanesian type. As Neu-Mecklenburg, it was part of a German protectorate 1884-1914. Australia governed it from 1921 under mandate and trusteeship. Kavieng is the chief town and Nusa the chief harbour. Before attacking New Guinea in 1942 the Japanese wanted to obtain bases close to that island, and having bombed Kavieng, occupied it on Jan. 23. Though the Allies bombed and shelled the town on several occasions, they made no landings. Area 3,800 sq. m. Pop. 35,000.

**New Jersey.** Middle Atlantic state of the U.S.A. and one of the 13 original states. It has an area of 7,836 sq. m., but despite this comparatively small size ranked eighth by pop. (4,835,329) in 1950.

In the N. it is crossed by ridges and mts. of the Appalachian system, the centre is generally level, and the S. slopes towards a coastal plain, where resorts like Atlantic City attract thousands of visitors. Important rivers include the Delaware, Hudson, Passaic, Raritan, and Hackensack. Manufacturing centres are Paterson, Elizabeth, Bayonne, and Hoboken. Notable for the diversity of its industries, New Jersey has petroleum refining, copper smelting, shipbuilding, fruit canning, meat packing works, and makes electrical machinery, chemicals, paints, varnishes, and dye-stuffs. It ranks second in zinc production, while iron ore is plentiful. Agriculture and forestry flourish; the proximity of New York has led to the development of market gardening. Eight rly. systems cover 2,132 m. Newark airport, one of the world's largest, was closed in 1952 after 118 people had been killed in three crashes on Elizabeth near by.

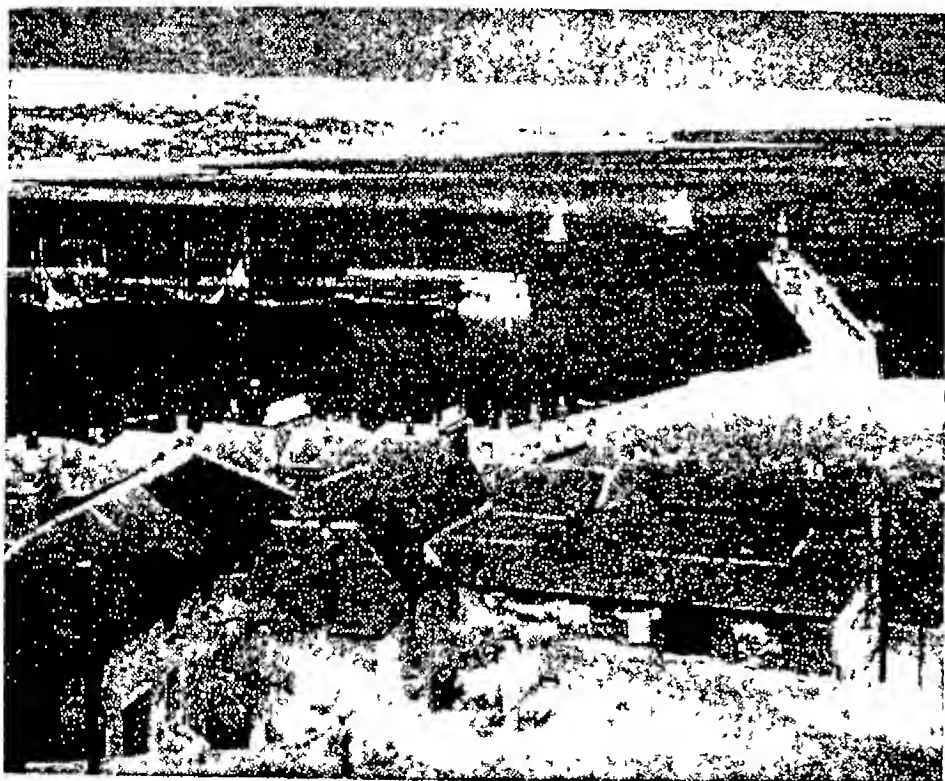
Two senators and 14 representatives are sent to congress. The capital is Trenton, but Newark and Jersey City are much bigger. Educational institutions include Princeton, Rutgers, Newark, and Drew universities. Morristown national historical park (958 acres) contains the site of the base hospital of the American army during the Revolution and of its main camp during the winter of 1776-77 and 1779-80.

The first settlers were Dutch who arrived about 1620. The Swedes followed, but in 1655 their settlements passed to the former. During the Dutch Wars the English took possession of the district, and the name of New Jersey was given because one of those to whom the land was granted by the duke of York was Sir George Carteret, formerly governor of Jersey. Later part of the territory came under the control of the Society of Friends, including Penn. In 1702 E. and W. Jersey were placed under the same governor and united as a crown colony until the outbreak of the War of Independence, in which New Jersey was the scene of 100 battles and skirmishes. Consult The Story of New Jersey, W. S. Myers, 1945.

**New London.** City and port of entry of Connecticut, U.S.A., and a co. seat of New London co. It stands on the Thames R., 3 m. above Long Island sound, 50 m. E. of New Haven, and is served by several rlys., by steamer, and by Groton airport. The harbour is one of the deepest on the Atlantic

coast; a shipbuilding centre from the 18th cent., it sheltered many privateers during the Revolution. In the 19th cent. it had a whaling fleet. An industrial centre, the city exports motor cars and imports lumber. It is the seat of the U.S. Coast Guard academy; while Groton (pop. 4,719) on the opposite bank of the Thames is the U.S. navy's Atlantic submarine h.q. A summer resort and yachting centre, New London is the scene of the annual Harvard-Yale boat race. Educational institutions include the Connecticut College for women. The city, first settled 1646, was incorporated 1784. Pop. 30,456.

**Newlyn.** A fishing village on Mounts Bay, 2 m. S.W. of Penzance, Cornwall, England. Its situation has made it a resort of artists, but it is also a fishing centre, with a good harbour protected by huge granite piers. Pilchards and mackerel are caught. The church is dedicated to S. Peter.



Newlyn. The harbour of this small Cornish fishing village

Newlyn has been part of the bor. of Penzance (*q.v.*) since 1934. Pop. est. 5,000.

**Newlyn School.** Colony of British artists settled about 1880 at Newlyn, Cornwall. The aim was to encourage work in the open air, and a fidelity to everyday life among the Cornish fishing folk. Pioneers of the colony included Walter Langley, H. S. Tuke, Edwin Harris, and Stanhope Forbes, whose topographical studies of the neighbourhood influenced many students. After the original impetus of the group had declined Newlyn continued to attract artists, possibly because of the unusual studio facilities. Later painters to work there included for a time Ernest and Dod Procter and Harold and (Dora)

**Newmains.** Town of Lanarkshire, Scotland. It stands on the coalfield, 2 miles E. of Wishaw. The chief occupations are in the coal mines, the Coltness ironworks, and the Morningside brickworks. Pop. 7,000.

**Newman, ERNEST** (b. 1868). A British music critic. Born Nov. 30, 1868, he was educated at Liverpool university, and after abandoning a career as Indian civil servant, joined the staff of Midland institute at Birmingham in 1903. Two



Ernest Newman, British music critic

years later he became music critic to the Manchester Guardian, and in 1906 to the Birmingham Post, resigning in 1919 when he settled in London. As critic to the Sunday Times he became one of the most incisive writers on music of his day. He wrote extensively on Wagner, *e.g.* A Study of Wagner, 1899; Wagner as Man and Artist, 1914 (revised ed. 1924); Facts and Fiction about Wagner, 1931; and a Life in 4 vols. (1933, 1937, 1944, and 1946). He also translated a number of Wagner's librettos for the Breitkopf and Hartel edition.

Newman's other publications on music included Gluck and the Opera, 1895; Elgar, 1906; Hugo Wolf, 1907; Richard Strauss, 1908; The Unconscious Beethoven, 1927; The Man Liszt, 1934; Opera Nights, 1943.

**Newman, JOHN HENRY** (1801-90). British theologian and cardinal. He was born in London, Feb. 21, 1801, and educated at Trinity College, Oxford, becoming in 1822 a fellow of Oriel. In 1828 he became vicar of S. Mary's, Oxford, having been in the meantime for a short period vice-principal of S. Alban's Hall.

In 1833, in conjunction with Hurrell, Froude and others, he began the publication of the Tracts for the Times, which inaugurated the Tractarian or Oxford movement. In the pulpit of the uni-

preaching sermons which attracted wide attention by their literary perfection, dialectical skill, and devotional tone, combined with the evident sincerity and the personal charm of the preacher. He thus exercised an almost unique influence on the younger thought of Oxford, and indirectly on the Church generally. In 1841 he published Tract XC, in which he argued that the 39 Articles were capable of an interpretation very different from the Protestant one usually accepted. This roused indignation, and in the following year he retired to Littlemore, and resigned the living of S. Mary's.

In 1845 Newman was received into the Roman Church, and went a year later to Rome, where he was ordained priest and made a D.D. Returning to England in 1847, he settled at Edg-baston, where he founded a congregation of the Oratory



He established the London Oratory in 1850, and in 1854 became rector of the R.C. university at Dublin. During the following four years he published his Idea of a University and his Lectures on University Subjects. A controversy with Charles Kingsley resulted in his autobiographical Apologia pro Vita Sua, 1864, giving with candour and sincerity his reasons for becoming an R.C. In 1879 he was made cardinal. He lived in retirement at Birmingham until his death, Aug. 11, 1890.

Newman was recognized as one of the most acute thinkers of his day, and his literary style has rarely been surpassed for beauty and clarity. As a preacher he stood in the first rank, and the influence of his writings has yet to be fully estimated. His dialectical skill was unrivalled; but it was often overwhelming rather than convincing. His hymn, Lead, Kindly Light, and his poem, The Dream of Gerontius, achieved wide popularity. See Oxford Movement.

**Bibliography.** Letters and Correspondence, ed. A. Mozley, 1891; The Oxford Movement, R. W. Church, 1891; The Anglican Career of Cardinal Newman, E. A. Abbott, 1892; Lives, R. H. Hutton, 1891; W. Barry, 1904; C. G. Atkins, 1931; W. Ward, 1937; J. Moody, 1946; Newman, Faith and the



**Newman Prize.** Naval prize founded in memory of Edward Newman, R.N., one-time chief engineer of Portsmouth dockyard. From the interest upon £400 a prize of books or scientific instruments is awarded annually to the lieutenant (E.) who obtains first place in practical engineering at the Royal Naval engineering college, Devonport.

**Newmarch, WILLIAM** (1820-82). British statistician. Born Jan. 28, 1820, at Thirsk, he entered a bank, and then an insurance office in London. During 1862-81 he held a high position in the banking house of Glyn, Mills and Co. He died March 23, 1882. Newmarch did a great deal of work for the Royal Statistical Society, and he assisted T. Tooke in writing a standard work, *The History of Prices*. The Newmarch lectureship at University College, London, commemorates him.

**Newmarket.** Urban dist. and market town of Suffolk, England, close to the border of Cambridge.

James I made Newmarket a racing centre and built a house here, as did Charles II. Market day, Tues. Pop. (1951) 10,185. Consult Royal Newmarket, R. C. Lyle, 1946.

**New Mexico.** S.W. state of the U.S.A. It has an area of 121,666 sq. m. and ranks fourth in size among the states. The surface is crossed by detached ranges of the Rockies, but in the S.E. is a barren plain, the whole comprising part of a great plateau with a minimum elevation of 2,876 ft. Sierras and canyons are notable features and there are several peaks 12,000-14,000 ft. high. The Carlsbad caverns, in a national park of 70 sq. m. in the Guadalupe Mts., are among the deepest and most extensive in the world. The Rio Grande flows N. to S., cutting the state into two unequal portions, and farther E. is an affluent, the Rio Pecos.

Irrigation is increasingly practised, large dams including Elephant Butte. Principal industries are stock raising and farming;

the Mexican War. It became a territory in 1850, and entered the Union as the 47th state in 1912. Two senators and two representatives-at-large are sent to congress. Pop. (1950) 681,187.

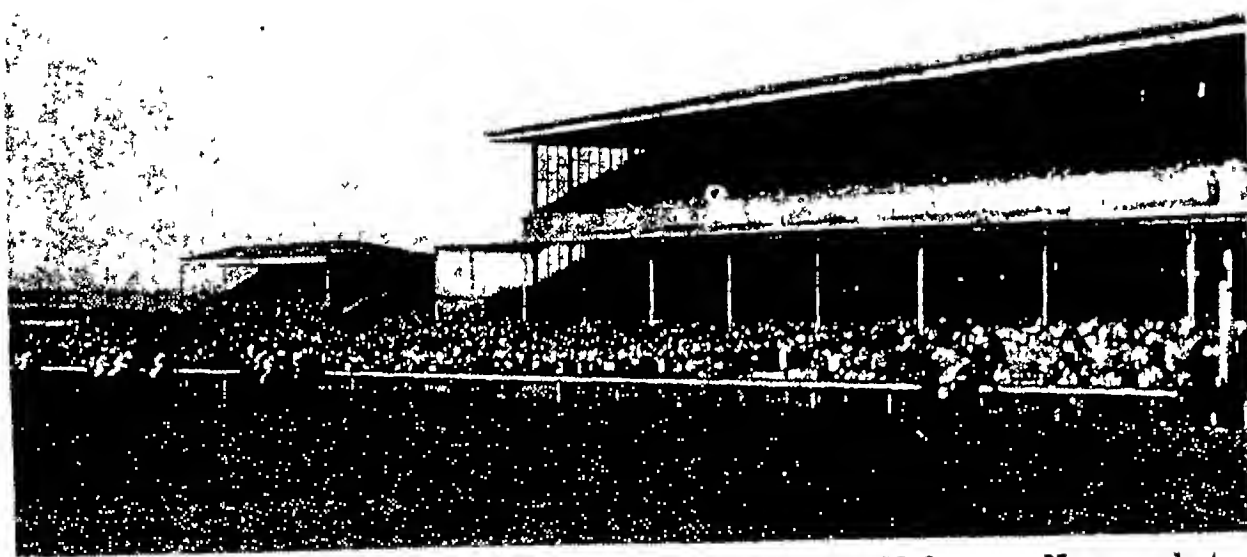
**New Mills.** Urban dist. and town of Derbyshire, England. It stands on the Goyt and Sett, 8 m. S.E. of Stockport, and is served by rly. The industries include textile printing, bleaching, dyeing, and the manufacture of paper and sweets. Pop. (1951) 8,475.

**Newmilns and Greenholm.** Police burgh of Ayrshire, Scotland. It stands on the Irvine, 7 m. E. of Kilmarnock, and is served by rly. Newmilns was made a burgh in 1490, and had a castle about that time. Manufacture of lace and other textiles began in the 19th cent. Pop. of burgh (1951), 4,043.

**New Model Army.** Name given to the army raised in 1645 by the parliament to fight against Charles I. After the passing of the self-denying ordinance, and the consequent resignations of some leading generals, parliament raised from the existing army and by impressment a special force of 14,000 infantry and 7,000 cavalry. It was placed under Sir Thomas Fairfax, was known as the new model army, and quickly became a drilled and disciplined force. On June 13, 1645, Cromwell joined it as leader of the cavalry, and on the next day it fought and won at Naseby. The Coldstream Guards trace their descent from the new model.

**Newnes.** Town of New South Wales, Australia. It is in Cook co., on the central tableland, 35 m. N.N.E. of Lithgow. Noted for its mines of oil shale, it is the terminus of a branch line from Newnes Junction on the main western rly. from Sydney to Bourke.

**Newnes, SIR GEORGE** (1851-1910). Founder of a famous English publishing firm. Son of a Congregational minister, he was born at Matlock Bath, March 13, 1851, and after education at Silcoates and the City of London school entered the fancy goods trade. He started the weekly *Tit-Bits* (q.v.) in Manchester in 1881, and brought it to London in 1884. Later he issued *The Strand Magazine*, *The Wide World Magazine*, *The Ladies' Field*, *Woman's Life*, etc.: and in 1893 the *Westminster*



Newmarket. Finish of one of the classic races on the world-famous Newmarket Heath, headquarters of horse-racing in England

shire. It is 13 m. E.N.E. of Cambridge, and has a rly. station. The headquarters of horse-racing in England, Newmarket Heath has two principal racecourses, the Rowley course and the July course; it is traversed by the Devil's Dyke. Near by are numerous training establishments and stud farms, and the main industry is the breeding, training, racing, and selling of racehorses. Events at race-meetings include the Cambridgeshire, Cesarewitch, and Two Thousand and One Thousand Guineas. The Jockey Club has its headquarters here. Tattersall's holds important sales in Sept. and Dec. The buildings connected with racing include the subscription rooms, Rous memorial hospital, and Astley institute. S. Mary's, an old Gothic building restored, and All Saints are the chief churches

cotton is the chief crop. In the desert of Los Alamos, N.W. of Santa Fé, is a centre of atomic energy research; Alamogordo air base, 125 m. S.E. of Albuquerque, was the site of the first atomic bomb explosion, July 16, 1945. New Mexico is rich in copper, while undeveloped resources include 192,000 million tons of coal and 33,000,000 tons of gypsum. Hobbs increased its pop. from 593 in 1930 to 10,619 in 1940 with the discovery of oil. Historic and scenic features include eight national monuments, among them Aztec ruins and Gila cliff dwellings. Santa Fé (q.v.) is the capital. The state university is at Albuquerque and the normal university at Las Vegas.

The area, explored by Spaniards early in the 16th century, became part of Mexico in 1821, and was ceded to the U.S.A. at the end of



Sir George Newnes, British publisher Langster

Gazette (*q.v.*). His firm became a limited company in 1891, and in 1920 joined forces with that of C. Arthur Pearson, Ltd. Liberal M.P. for Newmarket, 1885-95, and for Swansea, 1900-10, Newnes was made a baronet in 1895. He died June 9, 1910, and was succeeded by his son, Sir Frank Hillyard Newnes (1876-1955). Chairman of the family firm and director of many associate houses, Sir Frank was called to the bar 1898, and was Liberal M.P. for Bassetlaw, 1906-10; he left no heir to the baronetcy.

**Newnham College.** College for women in Cambridge university. Founded for resident



Newnham College, Cambridge. Sidgwick Hall and, left, Clough Hall, from the south

women students in 1871 by the Newnham Hall Company, the first hall was built in 1875. Five years later the company was amalgamated with the Association for Promoting the Higher Education of Women in Cambridge, and the society was incorporated. The college includes Old Hall (the original Newnham Hall), Sidgwick Hall, Clough Hall, so named after the first principal, Anne J. Clough (*q.v.*), and Peile Hall. It is undenominational. There is accommodation for over 200 students.

**New Norcia.** Roman Catholic abbey in Western Australia. Situated 80 m. N.E. of Perth, it was founded in 1846 by two Spanish Benedictines who came to undertake a mission to the aborigines. Originally called Nursia, after the birthplace of S. Benedict, the abbey was established in desolate scrub country and completed in 1850. It became the centre of outstanding work in converting and civilizing the aborigines, and now has within its spiritual jurisdiction an area of 16 sq. m. with an R.C. pop. of 3,000.

**New Order.** Name coined by the German National Socialists in 1940 for the regime they had decided to impose on occupied countries of Europe. The Germans were naturally to be the master race; nearest to them came the other Nordic races, Dutch and Scandinavian; next in order, Belgians, French, Czechs, and

Poles. Each country's economy was to be organized to Germany's advantage, but a degree of self-government was promised to those nations that merited it. In 1941 the Japanese produced a scheme for a new order in Asia on comparable lines.

**New Orleans.** City and port of Louisiana, U.S.A. The capital of Orleans parish and the largest city and the commercial capital of the state, it stands mainly on the left bank of the Mississippi, 107 m. from its mouth, and is served by Southern Pacific and other rlys. Much of the land bordering the city proper is marshy and below the level of the river at high tide, necessitating the building of levees, which extend along the city front and for many miles. The city covers about 200 sq. m., but the inhabited portion is only about 40 sq. m. It has 27 m. of frontage, on both banks of the river, which at a point opposite Canal

Street is half a mile wide and from 40 ft. to 200 ft. in depth. Over this waterway millions of tons of goods, valued in hundreds of millions of dollars, move annually in and out from the sea.

The streets in the central part are mostly narrow, but in the suburbs are broad and lined with trees. Canal Street, which separates the picturesque old French section from the newer commercial part, is the principal business

thoroughfare. Open spaces are Audubon Park of 250 acres, City Park of 216 acres, and Jackson, Beauregard, and Lafayette Squares. N. of the city the river nears Lake Pontchartrain, with which it is connected by a 6-mile canal.

With few exceptions the public buildings lack architectural splendour. The most noteworthy are the cathedral of S. Louis, a Creole-Spanish structure erected 1794, the archbishop's palace, dating from 1737, the granite custom house near the E. end of Canal Street, and the cotton exchange.

Institutions for higher education include Tulane university, known formerly as the university of Louisiana, with faculties of law, arts and sciences, medicine, and technology; Loyola (R.C.) university, which broadcasts daily; Dillard university for coloured students: the Ursuline academy, founded 1730; and the Jesuit college, opened 1847. The French Opera House, the principal place of entertainment, dates from 1859. A carnival is held on Shrove Tuesday (Mardi-Gras).

The cemeteries are a remarkable feature of New Orleans. The soil is so saturated with water that burial beneath the surface is not possible, and vaults with arched cavities are used, the coffins being ranged one above the other in tiers, 12 ft. above the ground level.

New Orleans is one of the most important commercial cities of America, and, after Liverpool, the foremost cotton port of the world. It has also flourishing manufactur-



New Orleans, Louisiana. Plan of the central districts of the city, showing the principal quays on the Mississippi





New Orleans, Louisiana. 1. Looking down Charles Street from Lee Circle towards Canal Street. The stone column is surmounted by a statue of Robert E. Lee. 2. Dumaine Street, in the old French quarter. 3. Jackson Square, with the cathedral of St. Louis, built 1792-94. 4. Air view of the city and the Mississippi river

ing interests. Sugar refining is a leading industry, and machinery, cotton goods, cotton-seed oil, boots and shoes, cigars, and furniture are produced. Economic life is largely carried on by Americans of Jewish descent; political life by Catholics of Irish and French.

Settled in 1717 by the French, who named it after the duke of Orleans, then regent of France, New Orleans was later deserted, but resettled in 1722. It became the seat of government of the French territory of Louisiana, and continued to flourish after its cession to Spain in 1763. In 1800 it fell to France, from whom it was purchased by the U.S.A., together with the remainder of Louisiana, in 1803, and ten years later was incorporated, having become a port of entry. It was the capital of Louisiana down to 1849, when it was superseded by Baton Rouge, and again during 1864-80. In 1815 the British attacked the city without success. Pop. (1950) 570,445.

**New Party.** Political party founded by Sir Oswald Mosley (*q.v.*) in Feb., 1931. He had laid down the principles of his political beliefs in a manifesto published in Dec., 1930; and when he found his views diverging fundamentally from those of the Labour party, he and five other Labour M.P.s broke away and formed the New Party as an Independent group. Of 23 candidates at the 1931 general election, not one secured election although they supported the National government. The party then collapsed.

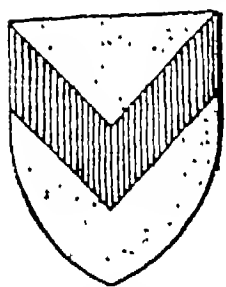
**New Plymouth.** Town of New Zealand. Situated on the S.W. coast of N. Island, N. of Mt. Egmont, it is the chief town of the Taranaki dist. It is a centre for the cattle-rearing and dairying industry of the dist., and is connected by rly. via Marton Junction with both Wellington and Auckland. It was first settled by the pioneers of the New Plymouth Co. in 1841. Pop. (1951) 21,763.

**Newport.** Mun. borough and market town, also the capital, of the Isle of Wight. It stands on the Medina, near the centre of the island, 8 m. W. of Ryde, and is served by the island rlys., of which it is the headquarters. The chief building is the church of St. Thomas. Rebuilt in the 19th century, it contains some memorials from the older building, and a monument to Princess Elizabeth, daughter of Charles I. There are a 19th-century guildhall, a corn exchange, a Roman villa, and King James I grammar school, dating from 1612. In the school, Charles I made the treaty of Newport. God's Providence House is an interesting old building.

Industries include brewing; and the town is a centre for the general trade of the island. Newport is a busy port, the Medina being tidal to this point. In the 12th and succeeding centuries its citizens obtained various privileges, while it took the place of

Carisbrooke (brought within the bor. in 1933) as the island capital. In 1607 Newport became a chartered town; it had an M.P. 1554-1885. Market days, Tues. and Sat. Pop. (1951) 20,430.

**Newport.** County bor., seaport, and market town, also the largest town, of Monmouthshire, England.



Arms of  
Newport, Mon.

It stands on the Usk, 4 m. from its mouth, and is 12 m. N.E. of Cardiff. The town is chiefly on the W. side of the river; on the E. is the suburb of Maindee, included in the borough in 1889. The chief buildings are the church of S. Woollos, some parts of which are Norman and others Perpendicular, the old town hall, the offices of the county council, art gallery and museum, and market hall. Others include the technical college, the civic centre in Clytha Park, and the Royal Gwent Hospital. There are remains, including two towers, of a castle, remodelled in 1424 after it had been burned by Owen Glendower. The church of S. Woollos is the pro-cathedral for the diocese of Monmouth.

Newport has up-to-date docks covering 125 acres for its large shipping trade in coal, iron ore, iron and steel products, and general cargo. Other industries are shipbuilding, brass and iron founding, and the manufacture of galvanised iron sheets, steel tubes, nails, engines, boilers, chemicals, railway plant, glass, pottery, clothing, packing materials, etc. A transporter bridge, consisting of 2 steel lattice towers 240 ft. high, with a platform running between them, crosses the Usk. Here also is Uskmouth power station, completed 1952.

Newport owes its origin to its position on the borders of Wales, a castle having been built here about 1200. The townsmen obtained guild merchant and other privileges, and in 1624 Newport was made a corporate town. Its growth as an industrial centre began with the opening of the S. Wales coalfield; large extensions of the docks were made in the 20th century to cope with increasing trade.

The name of New Burgh was given to the place about 1100 to distinguish it from the older Caerleon; later it became Newport. On Nov. 4, 1839, there was a serious rising of the Chartists here. Since 1839 it has been governed by a

mayor and a corporation. It united with Monmouth during 1832-1918 to send a member to parliament; from 1918 it was represented separately. Market days, Wed. and Sat. Pop. (1951) 105,547.

**Newport.** Seaside resort of Pembrokeshire, Wales. It stands on Newport Bay, at the mouth of the Nevers, 6 m. E. by N. of Fishguard. About 1300 a castle was built here; and Newport was at one time a flourishing port and a centre of woollen manufacture, but after 1700 it began to decay, and lost its market rights and its town charter. The small harbour is not easy of access.

**Newport.** Market town and urb. dist. of Shropshire, England. It stands on the Shropshire Union canal, 17 m. E. by N. of Shrewsbury. The chief building is the rebuilt church of S. Nicolas, and there are a town hall, a corn exchange, and a grammar school of 1665, also an old market cross. There is trade in agricultural produce; and valves are made.

Newport was founded about 1100, and the townsmen received a number of privileges, including trading rights. In 1551 it was made a chartered town under a high steward, and this constitution existed until 1883. In 1894 it was made an urban district. Market day, Fri. Pop. (1951) 3,744.

**Newport.** City of Kentucky, U.S.A., in Campbell co. It stands at the confluence of the Licking and Ohio rivers, opposite Cincinnati, and is served by the Nashville and the Chesapeake and Ohio rlys. The great steelworks here was the scene of a strike that began in 1921 and lasted for seven years. Settled 1790, Newport was incorporated 1795, became a city 1850. Pop. (1950) 31,044.

**Newport.** City and port of entry of Rhode Island, U.S.A., the co. seat of Newport co. Formerly the capital of the state, and now a summer resort on Narragansett Bay, 29 m. S. of Providence, it is served by the New York, New Haven, and Hartford rly. It has a secure and spacious harbour, and several naval establishments. During the period 1890-1914 it was the summer capital of wealth and fashion, its seaward drive being lined with the palaces of the millionaires. The American "400"—the social élite—were so called because the Newport ballroom of Mrs. William Astor, leader of society, held only that number. Newport reflects, in its architectural styles, Rhode Island's early

hospitality to dissenting sects, of which five built their earliest churches on American soil at Newport. Settled in 1638, Newport was chartered as a city in 1784 and rechartered in 1853. Pop. (1950) 37,564.

**Newport News.** City and port of entry of Virginia, U.S.A. The Atlantic terminus of the Chesapeake and Ohio rly., at the mouth of the James river and the head of Hampton Roads, it was a small fishing village until the rly. was completed in 1882. A shipbuilding and dry dock company, founded here in 1896, the year of the city's incorporation, has one of the largest yards in the world, ideally situated with respect to tides, deep water, and proximity to the sea. In 1936-37 the Farm Security Administration provided model low-cost housing on 436 acres near Newport News; the work involved was carried out by Negroes. In the city's foundries, turbines were cast for hydroelectric power plants under the T.V.A., and for Dnepropetrovsk, Ukraine S.S.R. Pop. (1950) 42,358.

**Newport-on-Tay.** A police burgh of Fife, Scotland. It stands on the Firth of Tay, 1½ m. S.E. of Dundee, of which it is virtually a residential suburb. It is served by rly., and a ferry connects it with Dundee across the Tay. Pop. (1951) 3,274.

**Newport Pagnell.** Market town and urban dist. of Bucks, England. It stands on the Ouse and its tributary the Ousel, 14 m. N.E. of Buckingham. The town is served by rly. and the Grand Union Canal. The chief building is the church of SS. Peter and Paul, dating in the main from the 14th century, with two fine porches; the clock has chimes which play 15 different tunes. Among several charities is an almshouse, founded in 1280, now called Queen Anne's hospital, after the queen of James I. The centre of an agricultural district, the town was once known for its manufacture of lace. There was a Bronze Age settlement here. During the Civil War the town was taken by the Parliamentarians in 1643. Market day, Wed. Pop. (1951) 4,377.

**New Providence.** Island of the Bahamas. It lies between Andros (W.) and Eleuthera (E.), and is 19 m. long by 10 m. wide. It is covered with undergrowth and contains extensive lagoons. On its N. coast is Nassau, the seat of government of the Bahamas. This is the most densely populated of the islands, and produces fruits,



being specially noted for the pine-apples exported to England and the U.S.A. in large quantities. Settled by the English in 1629, it was permanently colonised early in the 18th cent. Pop. 30,000.

**Newquay.** Holiday resort and urban dist. of Cornwall, England. It is on the N. coast on Newquay

and chartered as a city in 1899. Pop. (1950) 59,725.

**New Ross.** Urban dist., market town, and river port of Wexford, Irish Republic. On the Barrow, 13 m. N.E. of Waterford, it has a rly. station. On the other side of the river, in Kilkenny, is Rosbercon, part of the urban dist.



Newquay. Bathing beach at this popular holiday resort of North Cornwall

Bay, 14 m. N. of Truro, and is served by rly. It has a small harbour in which lie pleasure boats. Visitors are attracted by the rugged coast scenery, and by the bathing and surf-riding. Pop. (1951) 9,930.

**New River.** Artificial waterway in Herts and Middlesex, England. Fed by the Chadwell and Amwell springs in Herts, and by the Lea at Broxbourne, it extends S. about 24 m. to Stoke Newington, having reservoirs in the bors. of Stoke Newington and Hornsey. Constructed by Sir Hugh Myddelton (*q.v.*), 1609-13, at a cost of £500,000, the undertaking was acquired by the Metropolitan Water Board (*q.v.*) in 1904, when the New River co. received as the purchase price £6,534,000 of 3 p.c. water stock, besides certain contingent rights estimated roughly at an additional £500,000. New offices of the water board were opened at Rosebery Avenue, on the site of the New River Head, in 1920, at a cost of £300,000.

**New Rochelle.** City of New York, U.S.A., in Westchester co. It stands on Long Island Sound, 17 m. N. by E. of New York city, and is served by rlys. Among many fine residences are mansions dating from the Dutch and English colonial periods. Leland Castle, noted for its interior decorations, is occupied by an Ursuline seminary. Tom Paine was buried at New Rochelle in 1809 on land presented by the state, but his remains were taken back to England by Cobbett in 1819. The town was settled by Huguenots in 1688, incorporated in 1847,

The industries include shipping, for which there are quays along the river, tanning, and fishing. New Ross was probably built by the English settlers, and was a corporate town surrounded by walls. It was besieged by Cromwell, who destroyed the fortifications. There was fighting here during the rising of 1798. From 1574 to 1800 it was separately represented in the Irish parliament, and during 1800-85 at Westminster. Rosbercon, which was once a separate borough, had a monastery founded about 1200. Market days, Wed. and Sat. Pop. (1951) 4,911. Old Ross is a village  $3\frac{1}{2}$  m. away with ruins of a castle.

**Newry.** Urban dist., market town, and seaport of co. Down, N. Ireland. It stands on the river Newry, which has been canalised to afford access for vessels from the sea, 35 m. S.W. of Belfast and 63 N. of Dublin, with which it has rly. connexion. The town has a technical school. Eight bridges cross the river here, and there are four draw-bridges over the canal. An important port for the export of agricultural produce and cattle, it has also corn and meal mills, a large flax-spinning mill, and a spade and shovel factory. The older part of the town is separated by the

river from the newer part called Ballybot. Newry grew up round an abbey founded in 1175. It was made a chartered town soon after 1600, and until 1800 sent two members to the Irish parliament. From 1800 to 1918 it returned one member to Westminster; it was in the N. Down parl. div., 1918-50, and under the 1948 redistribution is in the N. Down co. constituency. Market days, Tues., Thurs., Sat. Pop. (1951) 13,264.

**News Agency.** Organization for the regular supply of news to newspapers. Most agencies supply news of all kinds, but there are specialist agencies dealing with specific subjects, *e.g.* sporting, naval, military, aeronautical, motoring, shipping, law, finance. The earliest existing news agency is Reuters (*q.v.*), which is controlled by the Press Association and the Newspaper Proprietors' Association. Reuters deals with overseas news and the Press Association with home news.

Other important news agencies in Britain are the Exchange Telegraph Company and Central News. The principal news agencies in the U.S.A. are the Associated Press of America, and the United Press of America; the latter operates in Great Britain as the British United Press. Other agencies which have given worldwide coverage of events include Havas, France; Domei, Japan; and Tass, the U.S.S.R.

**News Chronicle.** London daily newspaper. Founded in 1846 as the Daily News under the editorship of Charles Dickens, it purchased the Morning Leader and the Star in 1912, the latter, an evening publication founded by T. P. O'Connor in 1888, being continued separately. In 1928 the Westminster Gazette, founded by Sir George Newnes in 1893, was absorbed, and in 1930 the Daily Chronicle, founded in 1855 as the Clerkenwell News, the Daily News adopting



New Scotland Yard, London. Headquarters of the Metropolitan Police, seen from Victoria Embankment

its present title *News Chronicle*. The newspaper is now largely owned by the Cadbury family and is regarded as the organ of Liberal opinion. It is published at Bouverie Street, London, E.C.4.

**New Scotland Yard.** Name given to the headquarters, on the Thames Embankment, of the London Metropolitan Police. The headquarters of the police were removed from Whitehall to New Scotland Yard in 1890. The building was designed by Richard Norman Shaw (1831-1912) and is considered to be his finest work. Its telephone no., Whitehall 1212, became famous. See Metropolitan Police; Police; Scotland Yard.

**News from Nowhere.** Story by William Morris, first published in America, 1890, and in England, 1891, with the sub-title, *An Epoch of Rest, Being some Chapters from a Utopian Romance*. It was written as a reply to *Looking Backward* (*q.v.*), and presents socialism of a different kind, showing it in practice some two or three centuries forward from the time at which the book was written.

**New Siberia.** Name of three groups of islands (Liakhov, Anjou,

De Long) in the Arctic Ocean, in Yakutsk A.S.S.R. Uninhabited except for polar stations, they contain beds of fossilised ice, from the Ice Age, with fossilised mammoth bones and ivory. Area 9,650 sq. m.

**Newsletter.** Term once applied to private letters containing news, of which the London letters in provincial and foreign newspapers are a kind of survival. Before printing was invented, letters between friends and relatives contained accounts of current events; sometimes they were written by tutors or other retainers. Then came professional writers of news, who existed concurrently with the newspapers of the 17th century, in the latter part of which they supplanted the newspapers as a result of the stringency of the licensing system applied to anything printed. These newsletters, as J. B. Williams points out in his *History of English Journalism* (1908), are more valuable sources of history than printed periodicals. Such were the Paston letters (*q.v.*) of the 15th century, and the Fugger News Letters (see Fugger) of the 16th.

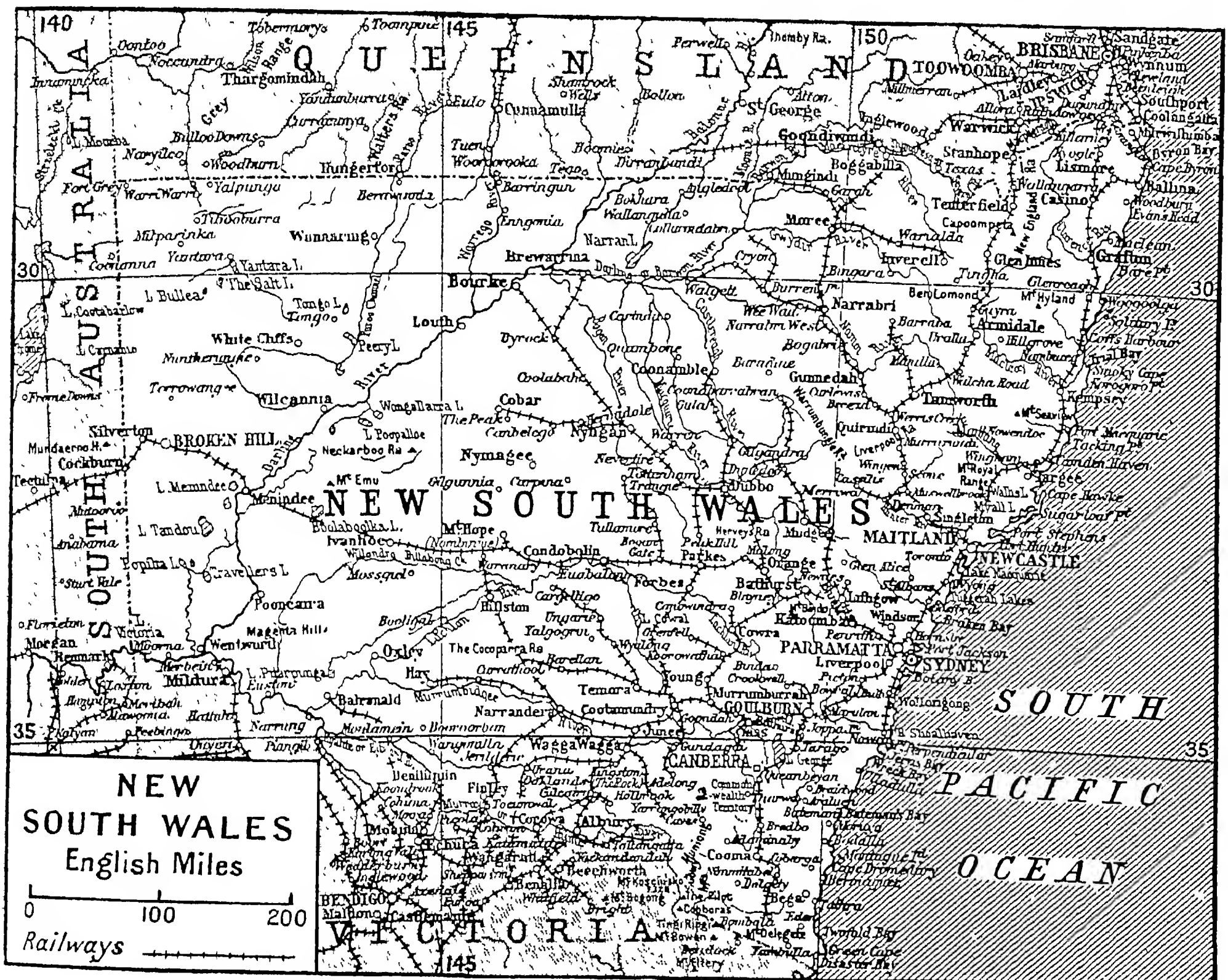
Periodical publications of the 20th century described as news-

letters were often an attempt to disseminate at regular interval personal or specialised interpretations of current events, *e.g.* The King-Hall News Letter (later The News Letter), The Week, and K. de Courcy's monthly memoranda on foreign affairs and strategy, all introduced during the later 1930s. They were posted to subscribers and carried no advertising. See Journalism; Newspaper.

**News of the World.** London Sunday newspaper, founded Sept. 29, 1843, by John Browne Bell. In 1890 it was acquired by Lascelles Carr and George Riddell, afterwards Lord Riddell. Its circulation of over 8,000,000 (1950) is the world's largest for newspapers.

**New South Wales.** Oldest state of the Australian Commonwealth. It lies on the E. coast, between Queensland and Victoria. In 1788, when British authority was first exercised, the name was applied to the whole of the continent E. of meridian 135° E.

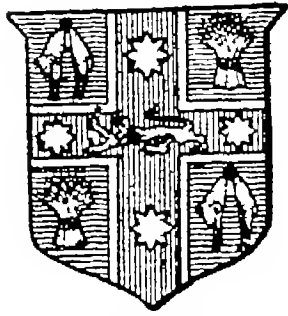
Physically the dominant feature is the main watershed, or divide, which follows roughly the trend of the coast 80 m. W. of it in the N. and 40 m. W. in the S.; this



New South Wales. Map of the oldest state of the Australian Commonwealth



divide, known by various names, Snowy Range, Blue Mts., New England Range, etc., separates the



New South Wales arms

short rivers which flow to the E. coast from those which belong to the system of the Murray-Darling. The divide crosses the great plateau, a plain once eroded

almost to base level and since uplifted and dissected, so that the peaks are residual mountains.

The process of erosion is, moreover, continuous, and the coastal rivers are still cutting down into the plateau and forcing the watershed W., so that it is now W. of the highest peaks. E. of the divide the coastal area is a plateau carved by the rivers into valleys, gorges, and scarps which present, from the coast, a complicated highland mass. W. of the divide the plateau descends more gently to the great plains across which the rivers, sometimes in heavy flood, sometimes a mere trickle, or a string of disconnected pools, ultimately reach the Murray. These plains are almost level.

The main rivers of the E. are the Shoalhaven, Hunter, Manning, and Clarence, in all of which either the main stream or tributaries flow roughly parallel to the coast to a lower course which flows directly coastwards, the whole making a T-shaped or L-shaped plan. On the W. the Murrumbidgee, Lachlan, and Darling make wide sweeps across the plains. The lakes are mountain tarns, as Blue Lake near Kosciusko, isolated basins like Lake George N.E. of Canberra, valley lakes, similar to Lake Bathurst, where a side valley has been dammed with alluvium, river-fed hollows like Lake Menindee, which acts as a regulator for the Darling, or coastal lagoons.

The climate is controlled by the steady procession from W. to E. of a succession of high pressure areas. Between them frequently blows the southerly "buster," a cyclonic wind, which causes a fall of temperature and is usually accompanied by rain and often attains a speed of 50 m.p.h. Rains are distributed uniformly throughout the year, but in the N.E. the summer, and in the S.W. the winter, is the rainy season. Kangaroos, wombats, phalangers, lyre birds, emus, and lorikeets are characteristic animals.

The plains are grass lands, interspersed with mallee or mulga and brigalow scrub; the plateau, especially on the E., is forested with wattles (acacias), eucalyptus, or gum trees, which grow after being cut and are ready for cutting again after a few years, making an almost inexhaustible store of timber.

The aridity of the plains, coupled with the ever present possibility of a season of drought, has led to the adoption of every possible means of saving water.

The minerals occur in definite areas, in the N.E. tin, at Inverell; in the far W. silver lead, at Broken Hill, and opals, at White Cliffs; in the centre of the plateau, coal, at Newcastle and Bulli; in the centre copper, at Cobar; and in the centre and S.E. gold, at Araluen, Cobar, and Bathurst. The wet E. is devoted to lumbering and dairy farming; profitable wheat farming is limited by the rainfall to the area where the fall lies between 20 and 30 ins.; the arid W. is devoted to sheep. Sugarcane and tropical fruits near the N.E. coast, vines in the Hunter Valley and near the middle course of the Murray river, at Albury,

are specialised products. Pop. 3,317,000, of whom nearly one-half live in Sydney, the state capital. The federal territory of Canberra (*q.v.*) lies within New South Wales. Area, 309,432 sq. m.

Government is dual. New South Wales is controlled, in part, by the Commonwealth parliament, and in part by the local parliament of two houses—the legislative council and the legislative assembly of 90 members. Executive authority is vested in a governor, assisted by a lieutenant-governor, and a cabinet of responsible ministers. Botany Bay was discovered in 1770 by Capt. Cook, the state then becoming a British possession; the first convict fleet arrived in 1788, when the first settlement was established at Port Jackson; transportation ceased in 1850. A partially elective legislative council was established in 1842, and responsible government in 1856. *See Australia.*

**New South Wales, BANK OF.** Institution founded in 1817. It has 778 branches and operates throughout Australia, New Zealand, and the Pacific islands. Its head office is at Sydney, and its London office at 29, Threadneedle Street, E.C.2.

## THE NEWSPAPER AND ITS INFLUENCE

Viscount Camrose, Editor-in-Chief, The Daily Telegraph

*Details of the world's leading newspapers are given under their appropriate headings throughout this Encyclopedia. See also under Journalism; and the biographies of many notable journalists and newspaper men of the present and past, e.g. Camrose; Kemsley; Northcliffe; Rothermere; Scott, C. P.; Stead, W. T.; and (in the U.S.A.) Greeley, H.; Hearst, W. R.; McCormick, R. R., etc.*

In Dr. Johnson's Dictionary newspapers are defined as "papers which give an account of the transactions of the present times." Transactions may be taken to include public affairs at home and abroad; contemporary literature, music, painting, and drama; commerce, including advertisements, and any other activities, intellectual, cultural, political, financial or commercial, which affect the lives of, and therefore interest, men and women belonging to a particular society. Though there have been enormous changes in the form and availability of newspapers, their essential purpose has remained constant. In one of the earliest newspapers, whose first issue appeared on May 29, 1695, the proprietor and editor, John Whitlock, announced that his newspaper would aim at presenting "an impartial survey of events of public use and advantage, not only to the curious and speculative, but also to the trading part of mankind." His object, he said, was to pre-

sent news only, "supposing other people to have sense enough to make reflections for themselves." Most editors today would be ready to endorse Whitlock's conception of the function of a newspaper.

**EARLY JOURNALISTS.** Johnson himself was one of the first great English journalists. Apart from his well-known contributions to *The Idler* and *The Rambler*, for some time he wrote reports on parliamentary debates for the bookseller Cave. He was unable, like parliamentary reporters today, to sit in the press gallery. Cave arranged for him to receive reports on "the subject of discussion, the names of speakers, the side they took and the order in which they rose, together with notes of the arguments advanced and the course of the debate." From this material Johnson "composed the speeches," which usually flattered those who had delivered them by being more eloquent and sagacious than the originals. Johnson, however, "disapproved

the deceit he was expected to practise, and was not easy till he had disclosed the deception."

Other distinguished pioneers were Addison, who founded *The Spectator*; Steele, who founded *The Tatler*; and Swift, who for some years contributed regularly to *The Examiner*. Swift's contributions, as was to be expected, were highly opinionated, and originated what came to be called the leading article or editorial.

Perhaps the most notable of all early journalists was Daniel Defoe, who founded *The Review* at the beginning of the 18th century. This talented and versatile man, if he was less of a moralist than Johnson and Addison, less of an essayist than Steele, and vastly less settled in his opinions than Swift, was a first-rate reporter, and, as it would now be called, columnist. He was even able to provide an eye-witness account of the great plague of 1664-65 (*Journal of the Plague Year*) which was accepted as authentic until it was noticed that Defoe was only a young child at the time the catastrophe occurred.

Wilkes in his North Britain fought for the right to publish parliamentary proceedings, and undeniably played a large part in freeing newspapers from governmental restrictions. The influence of William Cobbett's robust, highly individual journalism reached far beyond the normal newspaper readers of his time. Junius, now believed to have been Philip Francis, in his Letters exerted a great influence on public affairs. Leigh Hunt's vigorous conduct of *The Examiner* earned him some months of imprisonment, which, however, he spent in considerable ease with full facilities for writing.

These were the first great names in a profession which has continued to attract men of outstanding ability—Delane of *The Times*, Le Sage and Edwin Arnold of the *Daily Telegraph*, C. P. Scott of the *Manchester Guardian*, and J. L. Garvin of the *Observer*, to mention only a very few.

**FREING OF NEWSPAPERS.** Though the newspaper, as known today, is a comparatively recent development, its equivalent has existed since the beginning of time. There are no human beings so primitive that they are not curious about their own and their neighbours' affairs, and who do not find some means of satisfying that curiosity. Before the printing press there were written newsletters; before the telegraph there

were postboys and couriers; before writing as a means of communication existed there was word of mouth. Through the most remote jungle and across the widest deserts there somehow passes, and always has passed, news of what is happening far and near.

The appetite for news is so widespread and so rapacious that it has inevitably engaged the attention of governments. In England the freedom of newspapers from government interference has been achieved only with difficulty, and, incidentally, can be maintained only with vigilance. In 1632 the Star Chamber issued an edict forbidding the printing of foreign news. When nine years later the Star Chamber was abolished, the free press revived, but was again suppressed in 1649 by Cromwell, who, like the totalitarian rulers of today, allowed the publication of official journals only. One of them, ironically enough, in view of the position he took in *Areopagitica*, was edited by Milton. An official journal, the *London Gazette*, which first appeared on February 5, 1666, has been published twice a week ever since.

#### The Stamp Tax

With the Restoration the situation was easier, and after the Revolution of 1688 all press censorship came to an end, with the result that newspapers and periodicals greatly increased in popularity. Their growing influence alarmed the government, and an attempt was made to curtail their circulation by means of a stamp tax. Though the stamp tax was subsequently increased from 1d. to 4d., and an additional tax on advertisements was imposed, newspapers still multiplied (there were 53 in London alone in 1776) and increased their circulations. The tax was finally abolished in 1855. In June of that year the *Daily Telegraph* began publication at 2d., and then after ten weeks was reduced to 1d. Hitherto the position of *The Times*, whose price had been reduced successively between the years 1836 and 1861 from 5d. to 3d., had been unchallenged.

Apart from extraordinary measures taken in wartime, there was no attempt seriously to interfere with the conduct of newspapers until 1947, when, as a result of pressure from its own supporters in parliament, a Socialist government set up a royal commission "to inquire into the control,

management, and ownership of the newspaper and periodical press and news agencies." A parliamentary debate which preceded the setting up of this royal commission indicated that a desire existed, not merely to inquire into the ownership of newspapers (which in any case was known already) but to find means of curtailing their freedom to criticise government policy. Like the Star Chamber, which first instituted control of the press, the commission adopted the unusual procedure of hearing all evidence in camera. The practice was, however, changed after a short time and the evidence was published. This was fortunate in view of some of the unsubstantiated and reckless statements made in evidence by a few of the witnesses in their desire to produce a strong case against the press.

**THE MODERN NEWSPAPER.** The founding of the *Daily Telegraph* demonstrated the practicability of a national newspaper at 1d. By the eighties it could claim "the largest circulation in the world." In 1896 Alfred Harmsworth, afterwards Lord Northcliffe, founded the *Daily Mail* at ½d., and its circulation soon shot up to near the million mark. Its treatment and presentation of news, as well as its editorial comment, were less ponderous than had hitherto been the case. If this led to the charge that the serious purpose of a newspaper was being sacrificed to entertainment (curiously enough, the same charge was made in the early 17th century when newsletters gave place to newspapers), the *Daily Mail* continued to prosper and to provide a model which other popular newspapers attempted to follow. The *Daily Express*, founded in 1900 by Arthur Pearson and personally controlled by Lord Beaverbrook after the First Great War, and the *Daily Mirror*, founded by Lord Northcliffe in 1903, succeeded. The *News Chronicle*, which began as the *Daily News*, under the editorship for a brief while of Charles Dickens in 1845, and the *Daily Herald*, which was founded in 1912 and was taken over by the Labour movement in 1923, became in time large circulation newspapers. The provincial press underwent fewer changes than the national, but continued to exert proportionately greater influence.

More even than the national dailies, the Sunday newspapers built up vast circulations. The



News of the World, for instance, founded in 1843, attained a circulation of over one million in 1906, and forty years later had run its circulation up to the staggering total of 7½ millions. The People, the Sunday Pictorial, the Sunday Express, the Sunday Empire News, and the Sunday Dispatch also came to have circulations running into millions.

This vast extension of newspaper circulations which took place in the first three decades of the 20th century was made possible by inventions like the rotary press and the linotype machine, which enabled large numbers of newspapers to be printed quickly; and by a new process for making paper which greatly reduced its cost. At the same time, the operation of the Education Act of 1870 led to a great increase of literacy, and therefore in the potential newspaper-reading public. A demand for popular newspapers existed, and the means of satisfying this demand were made available. In the days of the Napoleonic wars a circulation of 4,000, such as that of the Morning Post, was considered to be large, but newspapers in later years have come to reckon their circulations in hundreds of thousands and then in millions.

#### The News Agencies

Another important factor in the development of the popular press has been the news agency. Though national newspapers pride themselves on having their own exclusive home and foreign news services, they must also to a greater or smaller extent rely upon agencies like Reuters, founded by Julius Reuter in 1849, for foreign news, and the Press Association for home news. In 1947 the control of Reuters by the Newspaper Proprietors' Association and the Press Association was extended to include representatives of the Australian and New Zealand press.

**AFTER THE SECOND GREAT WAR.** The governing factor in the post-war circumstances of British newspapers was shortage of newsprint. During the war itself rationing of available supplies was organised by the Newspaper Supply Company, consisting of representatives of national and provincial newspapers, acting under the Paper Control. This arrangement prevented the normal play of competition between newspapers, and artificially stabilised their relative positions. Of

the 13 London morning newspapers, two—The Times and the Daily Telegraph—sacrificed circulation to maintain, in the case of the Daily Telegraph, six, and of The Times, ten pages. At the same time The Times increased its price from 2d. to 3d., and the Daily Telegraph from 1d. to 1½d. The other national newspapers maintained their price at 1d., but reduced their size to four pages.

#### Post-War Paper Shortage

After the war the shortage of newsprint continued. Indeed, in consequence particularly of dollar difficulties in Canada, it tended to get worse. In 1947 the government, in order to make an economy of £2,000,000 in its dollar expenditure, further reduced purchases of newsprint, thereby preventing the maintenance of a temporary increase in size instituted in the post-war period. Newspapers were forced to revert to their wartime size. If, in the artificial conditions imposed by war this did not prevent them from adequately fulfilling their proper function, in the conditions of peace they were seriously handicapped. For instance, the proper reporting of parliamentary debates, so necessary in a democracy, was impossible.

Certified statements of circulation indicate that in July, 1947, the Daily Express was leading all national dailies, with the Daily Mirror as a close runner-up, the Daily Herald and the Daily Mail running neck and neck for the third place. In the case of the two "quality" newspapers, the Daily Telegraph had a circulation of approximately a million, and The Times about 270,000.

The shortage of newsprint effectively prevented any new newspaper enterprise. With the amalgamation of the Financial Times and the Financial News national dailies were reduced from 13 to 12. There continued to be nine Sunday and three evening newspapers. The provincial press consisted of 35 morning and 74 evening newspapers, compared with 45 and 88 respectively in 1921.

In France and most of the countries of western Europe newspapers were even more restricted than in England, and in eastern Europe, as Russian influence spread, they sank into a position of mere organs of official propaganda and vituperation. In the United States, on the other hand, supplies of newsprint were sufficient for newspapers to maintain, and sometimes to increase, their

pre-war size, and to permit of the production of massive Sunday supplements.

**INFLUENCE OF NEWSPAPERS.** If public education multiplied the numbers of those who could read newspapers, the extension of the franchise multiplied those who needed to read them. The Reform Act of 1832 coincided with a drive finally to abolish the stamp duties on newspapers, or "tax on knowledge," as they were called. By the time universal adult suffrage was an accomplished fact, a national and provincial press catering for the newly enfranchised was already in existence.

The development of truly representative government, indeed, is invariably accompanied by, and requires, a corresponding development of newspapers free to criticise, approve, and generally comment on, its operation. Wherever, as in the U.K. and the U.S.A., representative institutions authentically function, there are free newspapers. Wherever, as in Nazi Germany, Fascist Italy, and Soviet Russia, there is a dictatorship, newspapers are controlled by the state and used by it to deceive and subjugate their readers. The first step a dictatorship takes is to establish control of newspapers; the first indication that a dictatorship has ended is that newspapers are relieved of government control and interference.

#### Influence and Circulation

Various attempts have been made by means of public opinion polls and other activities to estimate the influence of newspapers. The result of these researches has not been decisive or convincing. It is certain that the influence exerted by newspapers is not strictly proportionate to their circulation. No one would suggest, for instance, that the influence of the Daily Telegraph is one-eighth of that of the News of the World because such is the relation between their circulations. On the other hand, newspapers reaching a wide public do undoubtedly influence their readers. There are those who contend that this influence is less than might be supposed. They point out that although the greater number of U.S. newspapers opposed President F. D. Roosevelt, he was four times triumphantly elected. None the less, it remains the case that dictatorial regimes cannot tolerate free newspapers. They, at least, believe in the influence of newspapers, as is demonstrated by the lengths to









ITY AREA WITH ENVIRONS





nificent harbour and to its location at the mouth of the navigable Hudson river which, by means of its connexion with the New York state barge canal system, provides an outlet to the Atlantic for the wheat, coal, lumber, and heavy industrial products from the Great Lakes area and the Middle West. The harbour is well protected, open throughout the year, deep enough for the largest ships, and vast enough to accommodate the whole U.S. navy without much inconvenience to regular commercial vessels. Broadly considered, it includes all the navigable waterways within a radius of 25 m. from the statue of Liberty on Bedloe's I. in the Upper bay. It consists of 771 m. of direct shore line on navigable water, about 578 m. of which are within the city proper. Narrowly considered, the actual harbour consists of the Lower bay, the Narrows, and the Upper bay, which provide a 17-m. channel from the ocean to the Battery, at the S. end of Manhattan I. Ships of all the world crowd the sea lanes in the world's busiest port. The total tonnage of cargo which passes through the port each year is approx. 120,000,000. During the Second Great War, 60 p.c. of all the cargo shipped from the U.S.A. by water went through the waterways and docks of New York.

#### Communications and Industries

Twelve railway systems terminate in New York, either at the two magnificent terminuses in the city itself, Grand Central terminal and the Pennsylvania station, or at terminuses in New Jersey, across the Hudson.

With the completion of the larger part of the New York international airport, formerly called Idlewild airport, in Queens, New York has become the world's greatest international air-traffic terminus. With the addition of the new airport facilities to those of La Guardia field, also in Queens, the city is able to receive and dispatch a total of 58,000,000 air travellers a year. Newark, formerly an important airport for commercial aviation, was closed in 1952 after three crashes (118 killed) on nearby Elizabeth.

Virtually every commodity is processed or manufactured in some part of the metropolitan area and every industrial process is carried on. The New York industrial area, by far the country's largest, has more manufacturing industry than Chicago, Philadelphia, Cleveland, and St. Louis together: 75 p.c. of U.S. clothing is made here, virtually

all women's clothing being designed and made in New York.

The area's leading industries, in the order of value of the products, are: manufacture of women's frocks; smelting and refining of non-ferrous metals; manufacture of coats, costumes, and skirts; manufacture of bread and bakery products; meat packing; petroleum refining; manufacture of men's suits and coats; manufacture of motor vehicles, bodies, and parts; publishing of periodicals; and manufacture of fur coats and other garments and accessories.

New York's prestige was enhanced by its acquisition of the status of a kind of world capital, with the setting up there in 1946 of the temporary H.Q. of the United Nations and the selection of a site in the mid-town section of the E. side of Manhattan as the permanent H.Q., which was duly opened in 1951.

#### "The World's Largest"

The city has the world's tallest buildings, having developed the skyscraper, invented in Chicago, in a way that has made it New York's contribution to architecture and the symbol of her aspirations and achievements. It has the world's largest office building (the R.C.A. building in Rockefeller Centre), the largest indoor theatre (the Radio City music hall, which seats 6,200), the largest departmental store (R. H. Macy and Co.), and the world's largest housing project (the Parkchester group of blocks of flats in the borough of the Bronx, constructed by the Metropolitan Life Insurance Co. and accommodating 45,000 people). Broadway, which zigzags the whole length of Manhattan from the Battery to the N. boundary of the city, is 18 m. long.

The city's budget, which reached \$1,000,000,000 (£250,000,000) in 1947-48, is far larger than that of any of the 48 states of the U.S.A. or of any other city. New York surpasses all other cities in the world in the size of its system of free education from six to 21 years of age, the elaborateness of its water-supply, and the number of its telephones, more than all the telephones of France, or Canada, or Sweden, or the U.S.S.R. It has the largest police force in the world, and the largest municipally owned and operated transport system in the U.S.A.

New York is the world's greatest centre of Jewish pop., the Jewish element numbering about 2,000,000. It is the world's negro metropolis, with 500,000 negro residents, some 325,000 of them

crowded into Harlem, on the upper West Side of Manhattan. It has more Italians than any city outside Italy; and it is the world's third Irish city. The polyglot pop. includes representatives of every nationality, race, colour, and creed in the world. The foreign white population, i.e. foreign-born and American-born of foreign or mixed parentage, is more than 4,000,000. The most important elements of this segment of the population are Italian, Russian, German, Polish, Irish, and Austrian.

#### Famous Skyline

Comparatively few relics and historic sites have been spared in the city's march to commercial supremacy, and even these go back at the most, only three centuries. The city has, however, a peculiar beauty of the 20th century, and its skyline, seen from a trans-Atlantic liner in the bay, from Queens across the East river at night, from Brooklyn heights, or from the Staten I. ferry, is an unforgettable scene.

Behind this coruscating façade there is much poverty, squalor, and ugliness. From 1933, however (notably during La Guardia's mayoralty 1934-45), the city has enjoyed far-reaching socio-economic as well as political reform and progress. With funds, provided chiefly by the federal govt.'s public-works projects instituted by President F. D. Roosevelt, La Guardia spurred the construction of new bridges, parkways, tunnels, housing projects, hospitals, schools, and playgrounds. Outstanding among these achievements were the several low-cost housing projects in all boroughs except Richmond, providing well-ventilated, well-equipped flats at low rents for former tenement dwellers, and the parkways and drives, especially the W. side Express highway and the Henry Hudson parkway along the Hudson, and the Franklin D. Roosevelt drive, formerly the East River drive, on the other side of Manhattan I., which, besides easing the traffic problem, transformed the waterfronts on the E. and W. boundaries of the island.

The city proper, which was consolidated in its present form on Jan. 1, 1898, consists of five boroughs, Manhattan, the Bronx, Brooklyn, Queens, and Richmond, of which only the Bronx is on the mainland. Brooklyn and Queens, separated from Manhattan I. by the East river, are on the E. end of Long I. The Bronx is N. of Manhattan, across the Harlem



river, and Richmond embraces Staten I., which is S.W. of Manhattan, across the Upper bay. The five boroughs are co-terminous with counties of New York state, Manhattan being New York co., Brooklyn Kings co., the others having the borough names.

To all intents and purposes, Manhattan I. is New York, the other boroughs being in varying degree its suburban residential satellites. There has been an exodus to the comparatively rural outlying areas in recent years, but Manhattan retains the most fashionable residential sectors and its pop. of 1,960,101 (1950) was second only to that of Brooklyn.

Brooklyn (*q.v.*) was an independent city until 1898. The New York navy yard is there.

The Bronx, fourth in pop. with 1,451,277, is called the "borough of universities." Its institutions of higher learning include divisions of New York University; of Hunter college, the world's largest women's college; and of Fordham University, a Jesuit institution.

Queens, first in size (120.6 sq.m.) and third in pop. (1,550,849), includes two international airports and Flushing Meadow park, where the New York world's fair of 1939-40 was held, and the U.N. general assembly met (when sitting in N.Y.) until 1950.

Although it is the third largest borough, Richmond had a pop. (1950) of only 191,555, which includes the city's highest percentage (74 p.c.) of native residents.

Manhattan I. is the heart of this sprawling metropolis. Thousands of suburban residents travel here daily to work from all parts of the metropolitan area. The transport facilities include 20 bridges, the most notable being the old Brooklyn and the new Triborough bridges across the East river and the George Washington bridge across the Hudson, and 18 tunnels, including the Holland and Lincoln tunnels under the Hudson and the Queens-Midtown tunnel under the East river. The Brooklyn-Battery tunnel under the East river, which took 10 years to construct, was opened in 1950. It is 1 m. 279 yds. in length.

There are tube trains under the Hudson, scheduled ferry crossings and, within the five boroughs, three city-owned underground rlys. or subways, trolley, and bus lines. The famous El (elevated rly.) was closed 1955. A uniform nickel fare (5 cents—in 1950, 4½d.) for any distance travelled was charged by the subway 1904-48,

when it was doubled, the subway having long been run at a loss.

All trolleys and trams have been done away with on Manhattan I., where surface transport is by single-fare buses. The subway is woefully overcrowded; other facilities for travel from E. to W. are also inadequate.

Manhattan's streets are laid out in the gridiron pattern usual in most U.S. cities, with numbered streets running from E. to W., except in the extreme S. end and in Greenwich Village, where the pattern of named streets and occasional numbered ones is erratic. Most of the avenues, which run N. and S. from river to river, are numbered, although a few are lettered and others, such as Park, Lexington, Madison, are named. Fifth avenue divides the island into its E. and W. sides, the street numbers beginning at Fifth avenue. The system of consecutively-numbered streets and avenues makes it easy to find the way in Manhattan.

#### Manhattan from S. to N.

A trip up Broadway from the Battery to the Bronx, with occasional side excursions to the E. or W., gives a glimpse of the immensely concentrated and varied life of Manhattan and of its most famous sights. At the Battery, so-called because the British built a fort there in 1693, is a pleasant park and the abandoned aquarium, a gloomy structure, to be supplanted by a new aquarium at Coney I., Brooklyn. The Whitehall district just N. includes not govt. buildings, but the offices of steamship lines; Bowling Green, where, legend says, Peter Minuit, director-general of New Netherland, purchased Manhattan in 1626 from the Indians for trinkets worth \$24; the U.S. custom house, which houses the offices of the collector of customs of the port of New York and other federal agencies; and Fraunces tavern, one of the island's hallowed landmarks, where George Washington bade farewell to his officers in 1783. On West street, bordering the Hudson, docks, sheds, and loaded lorries give evidence of the port's ceaseless activity. The city's wholesale food markets are here.

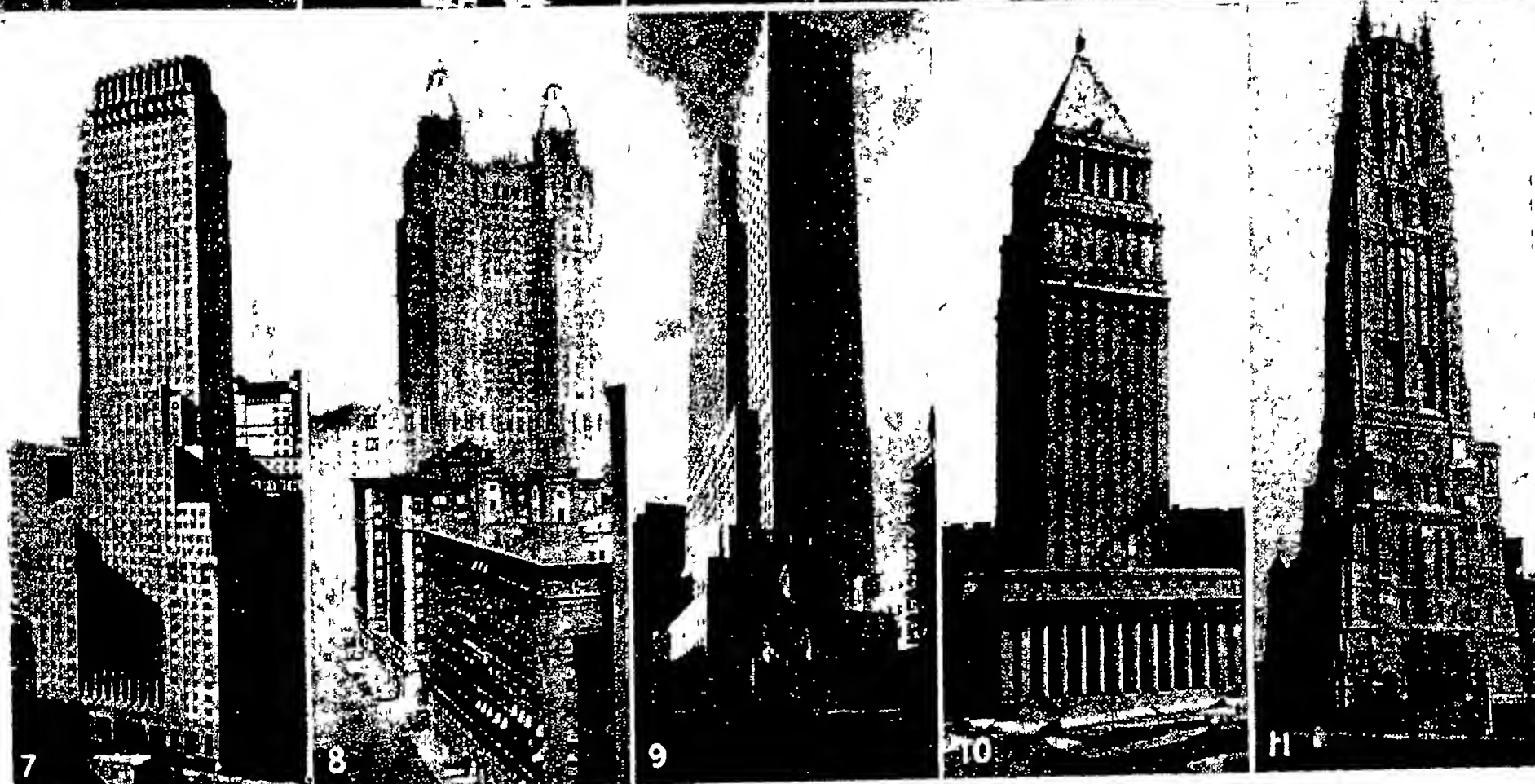
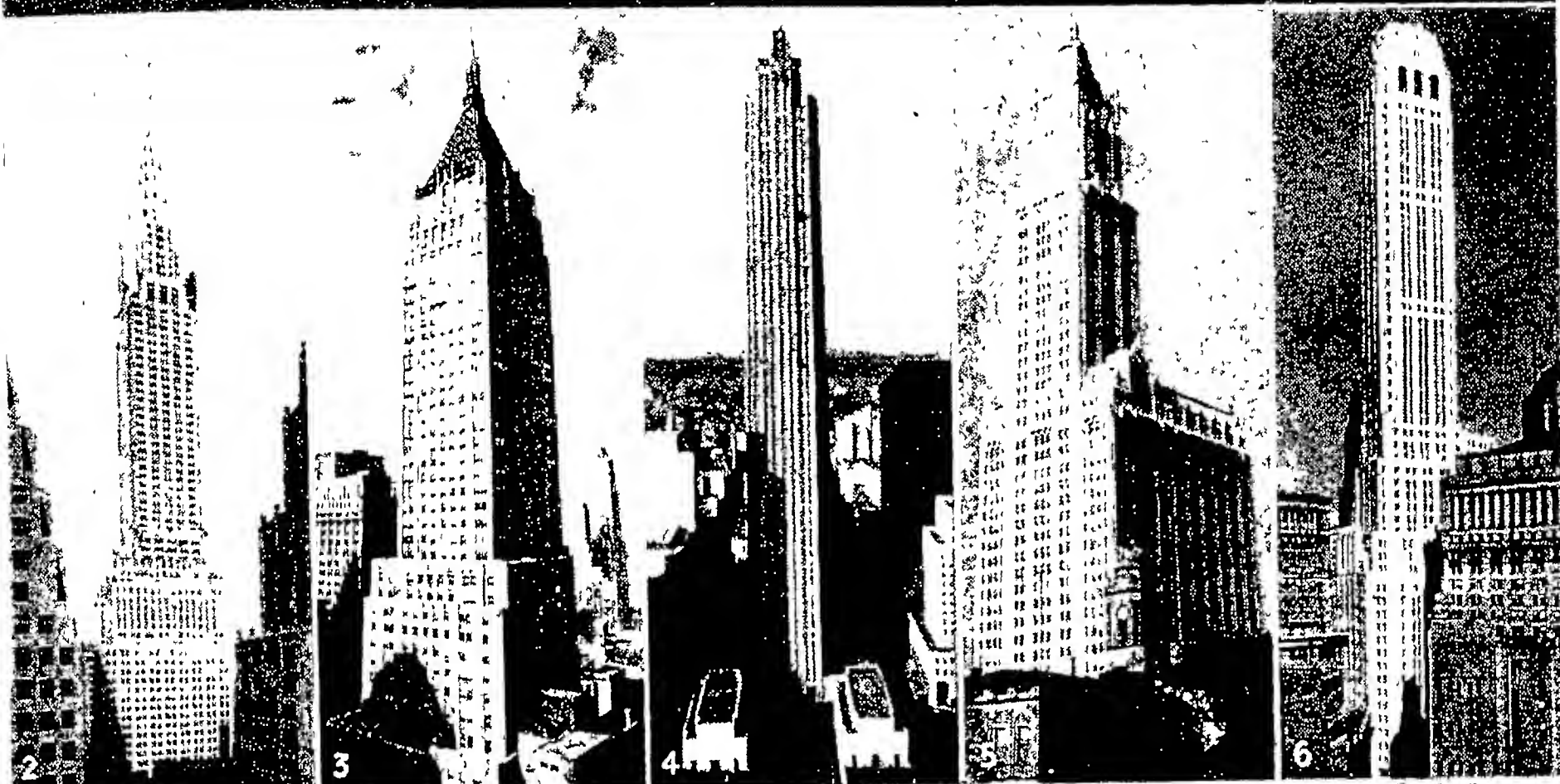
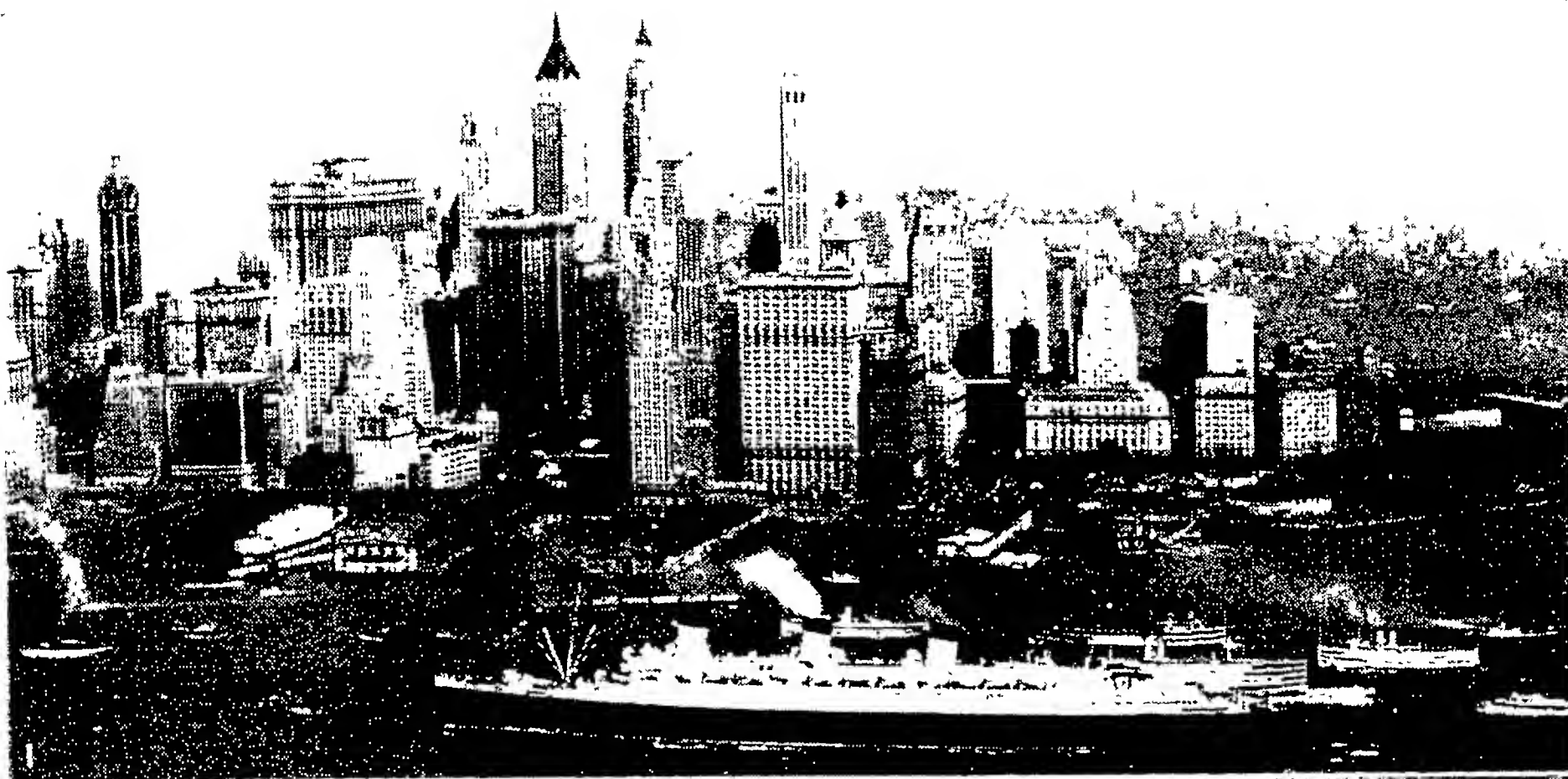
A little farther N. is the Wall street area, which is symbolised by the soaring skyscrapers which make canyons of the narrow streets. Skyscrapers were erected here in the first place to satisfy the demand for office room in this strategic area and to take advantage of the island's rock-ribbed foundation.

The 950-ft., 66-storey, 60 Wall Tower and the 927-ft., 71-storey bank of Manhattan building are the third and fourth highest structures in the city, taller being the 1,248-ft., 102-storey Empire State building at Fifth avenue and 34th street, and the 1,046-ft., 77-storey Chrysler building at Lexington avenue and 42nd street. Other landmarks are the New York stock exchange, the U.S. sub-treasury building, where Washington took the oath as president of the U.S.A. in 1789, and Trinity church, an incongruity amid the vast expanses of steel and stone, which became perhaps the wealthiest Protestant Episcopal church in the world and owner of a substantial parcel of lower Manhattan as a result of a land grant by Queen Anne in 1705.

Farther N. is New York's civic centre, dominated by the city hall, the third in the city's history. An Italian Renaissance structure, set in a small park where the declaration of independence was read to the American army in 1776, it was dedicated as the seat of city govt. in 1812. Overshadowing the city hall is the 40-storey municipal building, site of many municipal offices and of the city's broadcasting station; in the area are the U.S. court house, the state supreme court building, the city's new criminal courts building, and prison and police h.q. To the east, behind police h.q., is Chinatown, where 5,000 Chinese live and conduct business, and where their children attend the Chinese school, which is part of the city's system, and where they learn Chinese after regular classes. On the edge of Chinatown is the Bowery, a drab thoroughfare famous for the drink-sodden, down-and-out derelicts who frequent it. Somewhat to the N. and farther E. is the lower E. side, long notorious for the slums in which many of the city's poorest foreign-born residents are concentrated. Housing projects have somewhat improved the area.

Farther N. in the centre of the island is Washington square, one of the city's few squares, where Fifth avenue begins, and Greenwich Village, which clings tenaciously to its reputation as the Bohemian home of unsung artistic and literary genius. In the twenties and thirties, on the W. side, is New York's vast wholesale clothing industry.

The area between 34th and 59th streets, embracing most of the E. and W. sides, is the heart of the heart of New York, a concentra-



1. Skyscrapers of Lower Manhattan, with the British liner Queen Mary passing Battery Point. 2. Chrysler bldg., 1,048 ft. (1929). 3. Manhattan Co. bldg., 927 ft. (1929). 4. R.C.A. bldg., Rockefeller Center, 850 ft. (1933). 5. Woolworth bldg., 792 ft. (1913). 6. City Bank Farmers Trust bldg., 686 ft. (1931). 7. Chanin bldg., 675 ft. (1929). 8. Waldorf-Astoria hotel, 625 ft. (1931). 9. International bldg., Rockefeller Center, 514 ft. (1933). 10. U.S. Court House, 585 ft. (1936). 11. Riverside Church (1930); the tower contains the world's largest carillon. *See also* Empire State Bldg., for picture of the world's highest building. (1,248 ft.)

# **NEW YORK: ITS FAMOUS SKYLINE AND SOME OF ITS LOFTIEST TOWERS**



tion of the best which the city has to offer in the theatre, music, other kinds of entertainment, and the purveying of luxury in all its forms. At 34th street and Fifth avenue are the first of the luxury departmental stores, while to the W. are the Pennsylvania station and the New York post office, both huge structures.

Beginning at 42nd street on the W. side is the Times square district, of which the centre is New York's Piccadilly, where crowds gather on New Year's Eve and election night. The theatres are not on Broadway, but in the side streets just E. and W. of it. At Fifth avenue is the squat structure of the New York public library, in front of which are two seated stone lions. Just E. is the Grand Central district, dominated by the terminus. At the E. end of the island, bordering on the East river, is the U.N. building, on the site purchased by John D. Rockefeller, Jr., and presented to the U.N. for the world organization's h.q. (see picture opposite); it was formerly crowded with tenements, abattoirs, and garages. The upper E. side from the 50s to the 90s, notably Sutton and Beekman places and the mid-section of Park avenue, contains the city's smartest houses and flats.

Facing Fifth avenue, and extending from 48th to 52nd streets and W. to the avenue of the Americas (formerly Sixth avenue) is Rockefeller centre (*q.v.*). Across Fifth avenue is S. Patrick's cathedral, seat of the R.C. archdiocese of New York.

Central park, the city's largest, has an area of 840 acres and extends  $2\frac{1}{2}$  m. from 59th street to 110th street, the fringe of Harlem, and  $\frac{1}{2}$  m. from Fifth avenue to Central park W. It contains a zoo, much smaller than the city's principal zoo in the Bronx. Near are the Metropolitan museum of art, containing America's most comprehensive art collection, the American museum of natural history, and the Hayden planetarium.

On the E. end of the island, are the buildings of the Rockefeller institute for medical research, and the striking group of 15 structures of the New York hospital and the Cornell university medical college. At the edge of Yorkville, the German section, is Carl Schurz park.

At E. 96th street begins the three-square-mile expanse of the city's largest and worst slum area, Harlem, where approx. 325,000 negroes, 250,000 Puerto Ricans, Cubans, Mexicans, and other Latin Americans, and 250,000 Italians

live, several families or as many as 20 persons sharing one four-room flat. There are three sections, called negro, Spanish (a misnomer), and Italian Harlem, of which the last, only a square mile in area, is Manhattan's most densely populated section and the country's largest Italian-American colony. Relieving the squalor of negro Harlem are the Harlem river houses, Manhattan's first large-scale low-income housing project, constructed by the federal govt. in 1937, another development financed by John D. Rockefeller, Jr., and the blocks of flats in the Sugar Hill section where negro celebrities—musicians, composers, writers, actors, and prize fighters—live in segregated affluence.

At the W. extremity of Manhattan I., Riverside drive is no longer a fashionable residential section, but it and the 11-m. Henry Hudson parkway along the Hudson form one of the island's most attractive highways. Crowning Morningside Heights and extending along Broadway between 116th and 120th streets are the 69 buildings which form the main portion of Columbia university. Also on Morningside Heights is the cathedral of S. John the Divine, seat of the Protestant Episcopal diocese of New York, begun before 1900 and still unfinished after more than half a century.

The notable smaller islands in the waters around Manhattan include Bedloe's, Ellis, and Governors Is. in the Upper bay and several in the East river. On Bedloe's I. stands one of the first sights seen by passengers arriving in New York, Bartholdi's figure of Liberty Enlightening the World, universally called the statue of Liberty. Ellis I. is the h.q. of one of the nation's 22 immigration and naturalisation districts. Governors I., site of the "pleasure house" of the British colonial governors of New York, is the h.q. of the First army, with jurisdiction over New York, New Jersey, Delaware, and the New England states. On Welfare, Ward's, Riker's, and Randall's Is. in the East river, which is actually not a river but a tidal strait or salt-water estuary, are hospitals, a model penitentiary, a large sewage-disposal plant, and the Triborough stadium, which accommodates 30,000 spectators.

#### History of the City

Manhattan I., where all that New York is most famous for is concentrated in 31.2 sq. m., was discovered by Henry Hudson, exploring on behalf of the Dutch

East India Co., in 1609. The first houses for white men were built two years later, and the settlement, called New Amsterdam, was incorporated as a city in 1653, when its pop. was about 800.

After more than half a century of Dutch rule, the city was captured by the English in 1664 and was included in the grant of all the Dutch land in America which Charles II gave to his brother James, then duke of York. It was in honour of James that the city was then renamed as New York. In 1673, the Dutch recaptured it, but 15 months later, New Netherland, including the city, was ceded to the English. In 1686, the first charter was granted and the first newspaper was founded in 1725. During the revolution, the city was taken by the British in 1776 and the Americans did not regain control of New York below 14th street until 1783. In 1784, Governor George Clinton appointed James Duane as the first mayor of the independent American city.

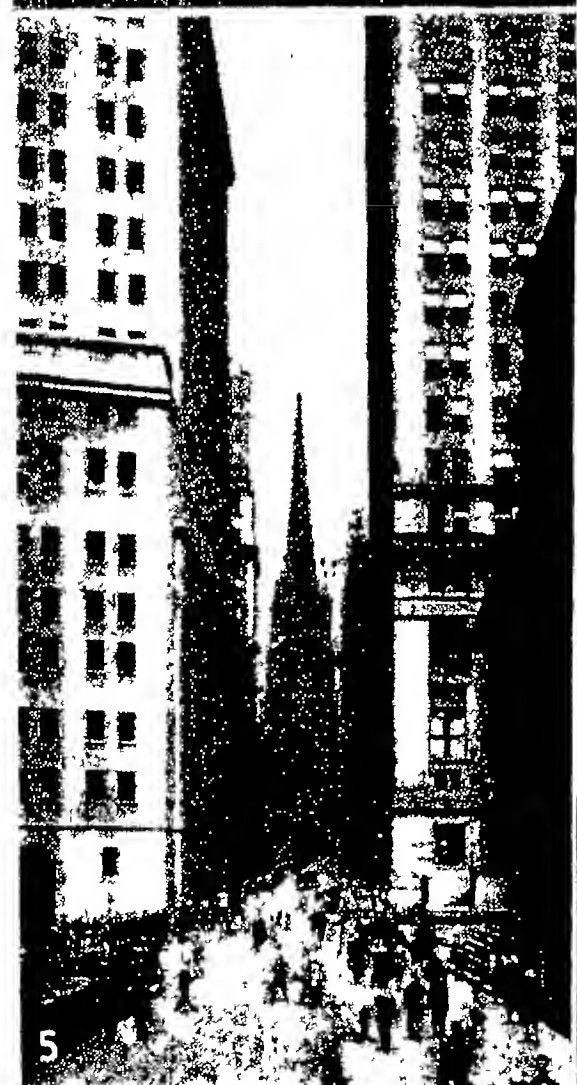
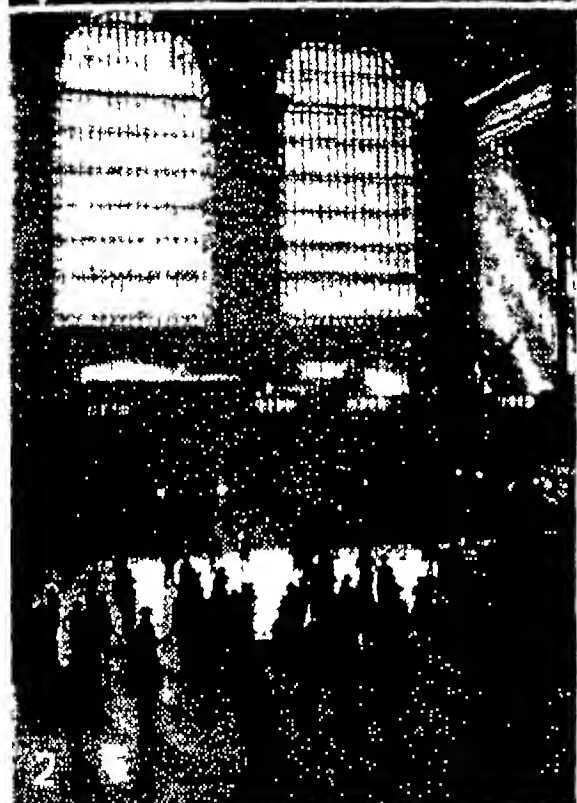
New York was the capital of the U.S.A. from 1785 to 1790; in the latter year, the pop. was 33,131 and the city limits were the Battery and the S. boundary of City Hall park. It was the capital of the state until 1797.

#### Administration of the City

The city govt. is vested in elected officials, headed by the mayor, who is administrator and policy-maker, members of the city council, which is the legislative body, and members of the board of estimate, who include, besides the mayor, the comptroller, the president of the council, and the five borough presidents. Judges of the higher courts are elected, others are appointed by the mayor.

Two of the city's daily newspapers which influence national opinion and reflect American opinion internationally are the New York Times and the New York Herald Tribune (*qq.v.*). The latter has a European edition, published in Paris. The New York Daily News, an isolationist "tabloid," has the largest circulation of any U.S. newspaper.

The city's recreational facilities include 20,300 acres of parks, comprising 10 p.c. of the city's area and of its assessed valuation; 65 m. of landscaped parkways which have no intersections and are restricted to pleasure vehicles, and several beautifully-designed and well-kept beaches, notably Jones beach on Long I., with which the famous Coney I., in Brooklyn, does not bear comparison.



1. Air view of the north central part of Manhattan, showing Central Park, Hudson River, George Washington bridge. 2. Main concourse of Grand Central rly. terminal. 3. Fifth Avenue. 4. Riverside Drive

5. Wall Street "canyon" with Trinity Church; on right, a statue of Washington stands over the spot where he took oath as president. 6. United Nations secretariat and assembly hall. 7. Stock Exchange

**NEW YORK: BUILDINGS AND STREETS IN THE METROPOLIS OF THE U.S.A.**



**New York Bay.** Inlet on the Atlantic coast of the U.S.A. It comprises the upper and lower bays, connected by a channel called The Narrows. The upper bay lies at the mouth of the Hudson river, and on its shores is the city of New York. It is joined to Newark bay by a channel called Kill Van Kull. The lower and larger bay separates Long and Staten islands from the mainland of New Jersey.

**New Yorker, THE.** Satirical and literary U.S. weekly magazine. First issued in Feb., 1925. It was edited by Harold Wallace Ross (1892-1951), chief owner. The laconic style of New Yorker contributors reflected from the first the disillusionment with war which prevailed in the 1920s: the style has been maintained, with frank enjoyment of American prosperity added. The New Yorker style of pictorial joke, characterised by a minimum of written explanation and the concentration of attention on the joke at the expense of visual accuracy, revolutionised comic art on both sides of the Atlantic.

**New York Herald Tribune, THE.** American daily and Sunday morning newspaper which resulted from the merger, in 1924, of the New York Tribune, established by Horace Greeley, April 3, 1841, and the New York Herald, started by James Gordon Bennett, May 6, 1835. Greeley was succeeded as chief proprietor and editor of the Tribune by Whitelaw Reid, who had been a war correspondent during the Civil War and U.S. minister to France and Great Britain. His son, Ogden Reid (1882-1947), effected the merger with the Herald. The Reid family combined the technical progressiveness of the Tribune with the enterprise of the Herald, which secured an exclusive account of Gettysburg in 1863 and sent Stanley in 1869 to find Livingstone. In editorial policy the paper preserves a conservative Republican stand on domestic affairs but is progressive in its international outlook. Thus it opposed President F. D. Roosevelt's New Deal, and advocated all-out aid to Great Britain long before Pearl Harbour. After the liberation of Paris, 1944, it revived its European edition, founded by Bennett in 1887 and known as the Paris Herald. The offices are at 230, West 41st street.

**New York State Barge Canal.** Largest artificial waterway in the U.S.A. From Buffalo on Lake

Erie to Troy on the Hudson river, it is 352 m. in length, to which its Oswego, Cayuga-Seneca, and other tributaries add another 173 m. It is served by 57 locks, and minimum depth is 12 ft. Opened in 1918, supplanting an earlier system, the canal enables cargoes to travel from New York to remote ports on the Great Lakes without transshipment. Modernisation required the abandonment of part of the old Erie Canal, which was the principal unit in the system, and the canalisation of the Oneida, Oswego, Mohawk, and Huron rivers, whose levels were altered and dammed at a cost of £30,000,000. Its great mass of commerce, flowing both inward and outwards, consists largely of petroleum, lumber, wheat, and molasses; lake carriers take coal, iron, motor cars, and grain to ocean ports. Total canal tonnage exceeds 4,000,000 tons a year.

**New York Times, THE.** American Independent Democratic daily and Sunday morning newspaper, established by H. J. Raymond (a former member of the editorial

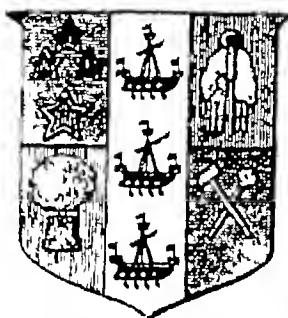
staff of the New York Tribune), Sept. 18, 1851. Adolph Ochs was owner from 1896 until his death in 1935, whereupon his son-in-law A. H. Sulzberger succeeded. The paper publishes, as part of its Sunday edition, a notable literary supplement and Times Magazine. Its motto is: "All the news that's fit to print." Its offices are at 229, West 43rd street. For its objective reporting the paper stands in esteem above all others in the city except the New York Herald Tribune, and exercises more influence than is suggested by its Sunday sales of one million.

**New York University.** Educational institution of the U.S.A. Its work is carried on partly in old buildings in Washington Sq., partly in newer halls and lecture rooms on University Heights in the Bronx. Founded in 1831 and privately endowed, it is the second largest educational institution in the U.S.A. The teaching staff exceeds 3,800 for some 35,000 students. Its Hall of Fame, with statues of noted Americans, overlooks the city.

## NEW ZEALAND: A BRITISH COUNTRY

*This Encyclopedia contains articles on Auckland; Dunedin; Rotorua; Wellington; and other places and physical features of note in New Zealand. See the biographies of Lowe, David; Mansfield, Katherine; Seddon; and other New Zealanders; also Geyser*

New Zealand (Maori 'Ao Tea Roa, the long white cloud) is a country of the British Commonwealth of Nations. It is about 1,200 m. E. of Australia, 6,000 m. W. of S. America, and 1,600 m. N. of the Antarctic continent, and consists of North Island (originally called New Ulster), South (or Middle) Island (originally called New Munster), Stewart I., and many small islands in the neighbouring seas, of which the Auckland Is., Three Kings, Solander, Snares, Antipodes, and Bounty are uninhabited; the Kermadec and Campbell islands have manned weather stations; Chatham, Cook, Niue, and Tokelau are populated (21,683 people in 1951). Total area 103,930 sq. m. Pop. (1951), excluding Chatham, Cook, Niue, and Tokelau, 1,939,472, of whom 115,676 were Maoris. The largest towns are Wellington, the capital; Auckland, Christchurch, and Dunedin. New Zealand also administers



New Zealand arms

Western Samoa under U.N. trusteeship (see Samoa).

Physically the islands of N.Z. form part of the great festoon of islands which begins at New Guinea, ends at Antipodes I., and includes New Caledonia. They are separated by the deep Tasman sea from the E. coast of Australia.

South Island (area, with adjacent islets, 8,003 sq. m.) consists of a great mt. range, the Southern Alps, which includes alpine lakes, glaciers, and snowfields. Mt. Cook (Maori Aorangi, sky piercer) is 12,349 ft.; 17 other peaks are more than 10,000 ft. The western slopes of these mts. almost reach the shore, and are clothed with mighty fern forests; in the south are fiords, of which Milford sound is the best known. The eastern slopes descend somewhat more gradually into the Canterbury Plains.

North Island (area, with adjacent islets, 44,281 sq. m.) consists of a highland reaching from Mt. Egmont in the S.W. to East Cape in the N.E., and two peninsulas—one a lowland stretching to the north-west to terminate in Cape Maria van Diemen, the

other mountainous and reaching Cook Strait. None of the mountain ranges is related to the Southern Alps; the Ruahine and Tararua ranges of the S.E. peninsula are, however, related to the Kaikouras ranges in the N.E. of South Island.

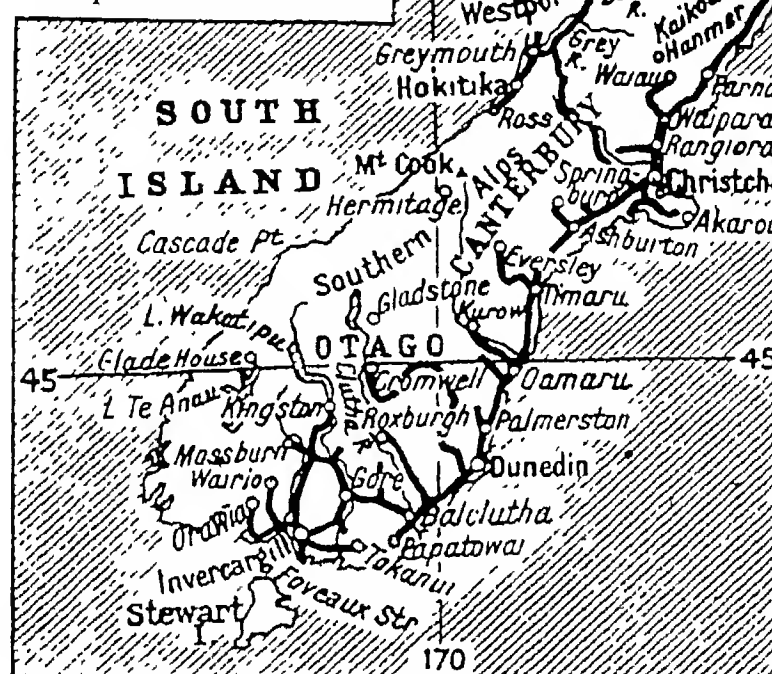
The Rotorua district is world-famous for its hot springs, geysers, and sinter terraces, where the Maoris cook potatoes by dipping them in the boiling springs. Of the volcanoes, snow-capped Ruapehu, 9,175 ft., with at its summit a crater lake of warm water, which boils and is heaved into the air and splashes the surrounding ice cliffs, and Ngauruhoe, 7,515 ft., are active; Tongariro, 6,140 ft., is quiescent; Mt. Egmont, 8,260 ft., extinct; Whakaari, White Island, in the bay of Plenty, is active. Lake Taupo, 238 sq. m. in extent, is the largest lake in North Island; Wakatipu, 112 sq. m., and Te Anau, 132 sq. m., are the largest of the predominantly alpine lakes of South Island. In South Island also New Zealand possesses a glacial system of some magnitude. Of the glaciers Tasman, 18 m. long, is reputed to be the largest glacier outside the Polar region; Murchison, 11 m. long, is next in size. The Waikato and Wanganui in N.I., and Clutha, Taieri, and Mataura in S.I. are the chief rivers. Few of N.Z.'s rivers are navigable: they are swiftly flowing and the issue into the sea of most of them is obstructed by formidable bars.

The climate is equable and provides probably the best example in the world of the insular type. There is an average of about 2,000 hrs. of sunshine a year, c. 600 hrs. more than in Great Britain. N.I. is warmer than S.I.: at Auckland the mean temps. of the warmest and coldest months are 66° F. and 52° F.; at Dunedin 59° F. and 43° F. The rains are sufficient; in N.I. they exceed 35 ins. everywhere, in S.I. the W. coast is very wet, over 100 ins. annually at Hokitika, and the E. plains are dry, the Canterbury Plains having less than 30 ins. The indigenous animals include two kinds of bat, the only land mammals; kiwis, penguins, and other birds which cannot fly, keas, cormorants; lizards, butterflies, and moths. Europeans introduced the farm and domestic animals; deer, trout, pheasants, and quail; rabbits, stoats, and weasels, which became a scourge.

The flora is essentially of the forest type; the tree ferns of Westland grow in great profusion;

the kauri of the N., which reaches a height of more than 200 ft., the rimu, and similar trees are due to the heavy rains; the beeches of S.I. are a mountain type; New Zealand flax or phormium is a characteristic swamp growth. The only native grasses are tussock grasses; the turf grasses have all been introduced, chiefly from English seed.

The dominant industry is sheep rearing; parts of N.I. in the Wellington peninsula have



New Zealand. Map of the British Dominion, S.E. of Australia, in the S. Pacific Ocean

more sheep per sq. m. than any equivalent area in the world. At first meat was only a by-product; but when research in N.Z. produced refrigerating experiments and at last a satisfactory method was evolved for refrigerated steamships. Canterbury lamb became a highly important export. Dairy farming with its products, butter and cheese, is of great importance, especially to Great Britain, New Zealand's best customer, which buys much of its food from N.Z. Crops of wheat, oats, and barley are grown for local consumption. Kauri gum is dug in the Auckland pen., phormium is gathered from both wild and cultivated plants, timber is cut from the forests. Coal is mined chiefly on the W. coast of S.I. In the valley of the Clutha, alluvial gold is dredged; New Zealanders were the pioneers in constructing dredgers suitable for such work.

An efficient rly. system connects the chief towns. It is supplemented by a coastal steamer service, and a system of good

roads. N.Z. has more motor vehicles in proportion to its pop. than any other country except Canada and the U.S.A. There are also air services, both internal and external, for passengers and freight.

In 1955 the principal exports in order of value were wool, butter, frozen lamb, cheese, frozen beef, sausage casings, tallow. The total value of the exports in 1955 was just under £NZ260,000,000, of which 65 p.c. went to Great Britain, about 6 p.c. to other countries of the Commonwealth, about 6 p.c. to France, and about 6 p.c. to the U.S.S.R. The total value of imports in 1955 was £NZ251,160,662, the chief imports being textiles, clothing, boots and shoes; motor vehicles, petrol, and petroleum products; electrical and other machinery; metal goods; wheat, sugar, tea, alcoholic drinks, and fruit. (£100 sterling in 1957 equalled £NZ100  $\frac{1}{16}$ .)

CONSTITUTION. New Zealand, officially a colony from 1840 to 1907, is an independent, self-governing member of the British Commonwealth of nations with high commissioners in London, Canberra, and Ottawa, and an ambassador in Washington. N.Z. is governed by a gov.-gen., the personal representative of the sovereign, but is in no way subject to the British govt. The N.Z. parl. system was modelled on that of the



U.K. with upper and lower house : but the legislative council (upper house) of 42, nominated by the gov.-gen. for seven years, abolished itself in 1950 as from Jan. 1, 1951, by 26 votes to 16. The house of representatives, which continued as before, consists of 80 members (four of them Maoris elected by Maoris), who are elected for three years. Representatives are paid (as also were the members of the former legislative council). Every adult not an alien has, subject to a residence qualification, one vote : women were enfranchised in 1893. made eligible to stand for election as representatives in 1919. There are two parties, Labour and National.

**SOCIAL LEGISLATION.** N.Z. established a Public Trust office in 1872, and three years earlier a

compulsory purchase of land for settlement ; Advances to Settlers Act ; state fire and accident insurance, and state control of water power. The Labour party, which held office 1935-49, introduced new measures of state control and revised old ones. The state owns and runs rlys. and air lines, and some of the coalmines, forests, sawmills, and tourist resorts. The state-owned Reserve Bank gives effect to the financial policies of the govt. The Social Security Act 1938 provided health insurance and coordinated and improved existing pensions legislation. The social security system was still further advanced in 1945. The money for the system is found by a tax on all wages, salaries, and other incomes, including company incomes.

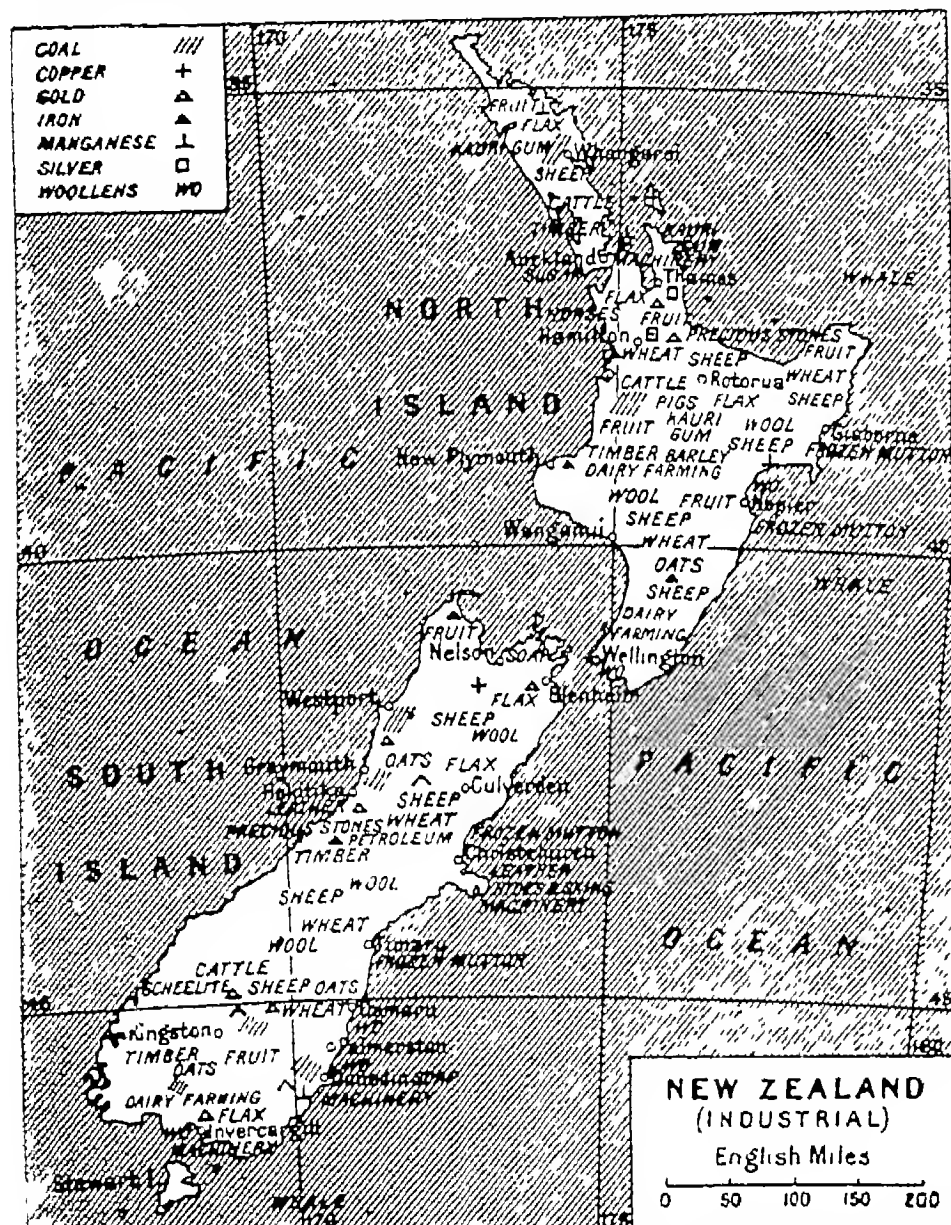
**HISTORY.** New Zealand was discovered by Tasman in 1642 ; he named Cape Maria van Diemen after the wife of his patron Anton van Diemen, the governor-general of the Netherlands Indies. The next European visitor was Capt. Cook, who came in 1769, 1773, and 1777. British, French, and Spanish ships arrived during the next 20 years. In 1815 the first mission was established in the bay of Islands. The first attempt at colonisation was made in 1825, but failed. In 1840 Wellington was founded, and Capt. Hobson

signed the treaty of Waitangi with the Maoris. Other settlements, Auckland, Nelson, etc., followed during the next decade. At first a dependency of New South Wales, New Zealand in 1853 became a self-governing colony.

The most important events in N.Z.'s history were the Maori Wars (q.v.) ; the discovery of gold, 1867 ; the invention of refrigeration ; and the part the country played in the two Great Wars. During the First Great War the Dominion furnished 91,914 volunteer troops and 32,270 conscript troops. In Aug., 1914, a New Zealand force, acting in conjunc-

tion with British and Australian warships, seized German Samoa, which was garrisoned throughout the war by New Zealand troops. Later, New Zealanders helped to defend the Suez canal. A force went to Gallipoli, April, 1915, and with the Australians—the combined force known as the Anzacs—took part in the landing at Anzac Cove and subsequent operations. In the Second Great War, New Zealand declared war against Germany a few minutes after the U.K. It sent some 135,000 men overseas, and they suffered over 30,000 casualties (10,000 killed, 19,000 wounded, besides missing). The New Zealand armoured div. did magnificent service in N. Africa and in Italy (see Italy : Campaign in, 1943-45 ; North Africa Campaign). **EDUCATION.** The first schools were mission schools, and the first pupils Maoris. Until 1876 education was a provincial concern and most schools were denominational. The Education Act of 1877 provided that education should be free, secular, and compulsory, the simplest form of Bible reading being banned as purely Protestant. At three a child may enter a free kindergarten. At five he (or she) may become a pupil at a coeducational state primary school in which there are free dental service, free milk daily, and apples in season. Attendance at school is compulsory between seven and 15. Thereafter the pupil may go to a secondary school and then to the university. The University of N.Z. consists of Otago University at Dunedin and University colleges at Auckland, Wellington, and Christchurch ; there are agricultural colleges at Palmerston North and Lincoln, near Christchurch. There are a few private fee-charging schools where religious instruction may be provided. The tendency of many of N.Z.'s best children to go overseas and stay there, even when suitable vacancies are available in N.Z., causes some concern.

**THE PRESS AND LETTERS.** There are more than 40 daily papers in New Zealand, of which the New Zealand Herald, Auckland, has the largest circulation. The Auckland Star, a lively evening paper, the Wellington Dominion, the Wellington Evening Post, the Christchurch Press, and the Otago Daily Times also have large and influential circulations. Of the weekly press, the Auckland Weekly News and the Free Press have position and prestige. The Listener is an



**New Zealand.** Map showing the distribution of resources and products throughout the Dominion

government annuities and life insurance office. Mental hospitals are government institutions, and most other hospitals are subsidised. Labour legislation began with the Employment of Females Act of 1873, which established an 8-hr. day for women. Since 1891 all factory labour has been controlled, sweated labour abolished, and minimum wages determined. In addition a system of industrial conciliation and arbitration has been developed.

Richard Seddon, prime minister 1893-1906, introduced old age pensions in 1898 ; superannuation for police, rly. servants, teachers ;

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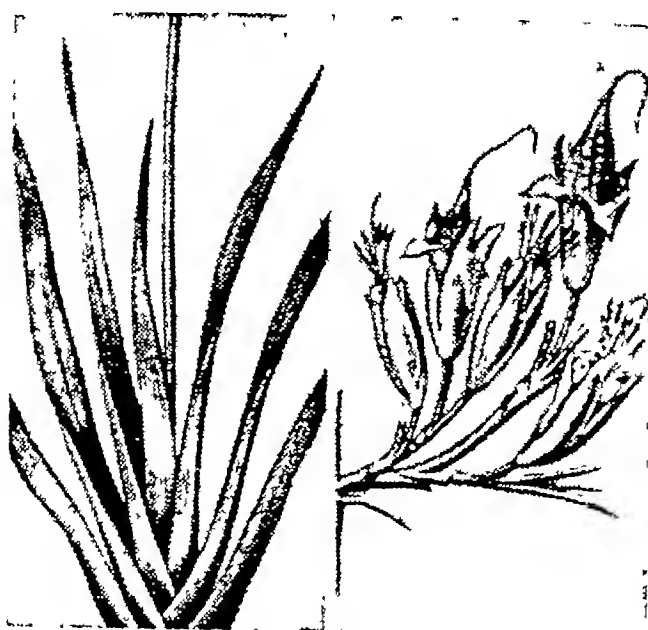
excellent broadcasting paper; and the National Review combines finance and culture.

Katherine Mansfield is the most distinguished of N.Z.'s writers, and N.Z. is the scene of her best stories. She is the interpreter of that transitional period in the life of Wellington when it developed from a small town to a big city. William Pember Reeves combined official duties in London with authorship. His best known work, *The Long White Cloud*, is one of the most charming and authoritative historical works in Empire literature. Jessie Mackay, strong supporter of women's rights, was a poetess of merit. Opportunities for publication are, however, rather limited, and so, as in so many other walks of life, the best writers have exercised their craft overseas.

Despite the fact that N.Z. landscapes are unsurpassed, there is no distinctive school of painting. The best known artist N.Z. has produced is David Low, the cartoonist. In music N.Z. has produced such able performers as Rosina Buckman and Oscar Natzka, singers, Colin Horsley, pianist, Douglas Lilburn, composer, and Warwick Braithwaite, conductor. A national symphony orchestra was formed in 1946.

**THE MAORIS.** The Maoris, who originally came from Polynesia, were in N.Z. hundreds of years before the whites arrived. They were fighters and cannibals with the reputation of being the wildest and most intractable people known. This reputation was a prime factor in deterring whites from visiting N.Z. Cook set an example by his (judged by the standards of the times) humane treatment of the Maoris. But many whalers and other trading adventurers were not so enlightened. It gradually came to be recognized that the Maoris were quick to react to the treatment they received. If consideration was shown them, they were appreciative, peaceful, and tractable. If they were treated harshly, they exacted a terrible revenge, slaying and eating their oppressors.

By the treaty of Waitangi, Feb. 6, 1840, the chiefs of N.Z. ceded to Queen Victoria all their rights and powers of sovereignty and in return were promised undisturbed possession of their lands and other property. The treaty, noble in conception, proved unworkable, in view of white immigration, and led to much hostility between the two peoples, and three wars, 1845-47, 1860-64, 1864-72.



New Zealand Flax. Left, sword-shaped leaves; right, flower-head with tubular blooms

The man most responsible for the present good relations between Maoris and whites was Sir George Grey, who was governor in 1846 and again in 1861-70, and from 1877 to 1884 premier of N.Z. He laboured to advance the status of the Maoris and to strengthen friendly relations between them and the whites, and laid the foundations of the mutual respect which the two peoples acquired for each other.

**Bibliography.** *The Long White Cloud*, W. Pember Reeves, 1898; *Government in New Zealand*, L. C. Webb, 1940; *Medicine and Health in New Zealand*, G. D. Robb, 1940; *Plants of New Zealand*, Laing and Blackwell, 1940; *The Maori People of Today*, I. L. G. Sutherland, 1940; *Educating New Zealand*, A. E. Campbell, 1941; *The Farmer in New Zealand*, Alley and Hall, 1941; *New Zealand Now*, O. Duff, 1941; *The Dairy Industry in New Zealand*, W. H. Hamilton, 1944; *Soil Erosion in New Zealand*, K. B. Cumberland, 1944; *New Zealand and the Statute of Westminster*, J. C. Beaglehole, 1944; *A Book of New Zealand Verse*, T. A. Curnow, 1945; *This New Zealand*, F. L. W. Wood, 1946; *Notable New Zealand Statesmen*, G. H. Scholefield, 1946; *Industrial Relations in New Zealand*, A. E. C. Hare, 1946; *New Zealand After Five Wars*, A. J. Harrop, 1947.

**New Zealand, BANK OF.** Institution established by Act of the N.Z. parliament in 1861. Nearly all the capital stock is held by the government, to which the institution acts as banker. There are over 250 branches in New Zealand, Australia, and the Pacific islands. The head office is at Wellington, and the London office at 1, Queen Victoria St., E.C.4.

**New Zealand, UNIVERSITY OF.** State university of the dominion. An examining body only, it was founded in 1870. It consists of the university of Otago at Dunedin; Canterbury College at Christchurch; Auckland university col-

lege; and Victoria university college at Wellington, where are the headquarters. For agricultural students there are Lincoln College at Canterbury, and Massey Agricultural College at Palmerston North. The agent is addressed c/o High Commissioner for New Zealand, 415, Strand, London, W.C.2.

**New Zealand Flax** (*Phormium tenax*). Perennial herb of the family Liliaceae, native of New Zealand. The sword-shaped leathery leaves are 3 to 6 ft. in length, arranged in two ranks, the older leaves clasping the younger at their base. When old they split at the tip. The flower-stem is about 15 ft. high, branched above, the branches supporting the curved, tubular, red or yellow flowers. The leaves yield beautiful and strong fibres, which Capt. Cook found served the natives for a variety of purposes—clothing, nets, twine, etc.—but the presence of gum in the leaves, difficult to remove, has made preparation for export much too costly.

**New Zealand Spinach** OR NEW ZEALAND ICE-PLANT (*Tetragonia expansa*). Fleshy herb of the

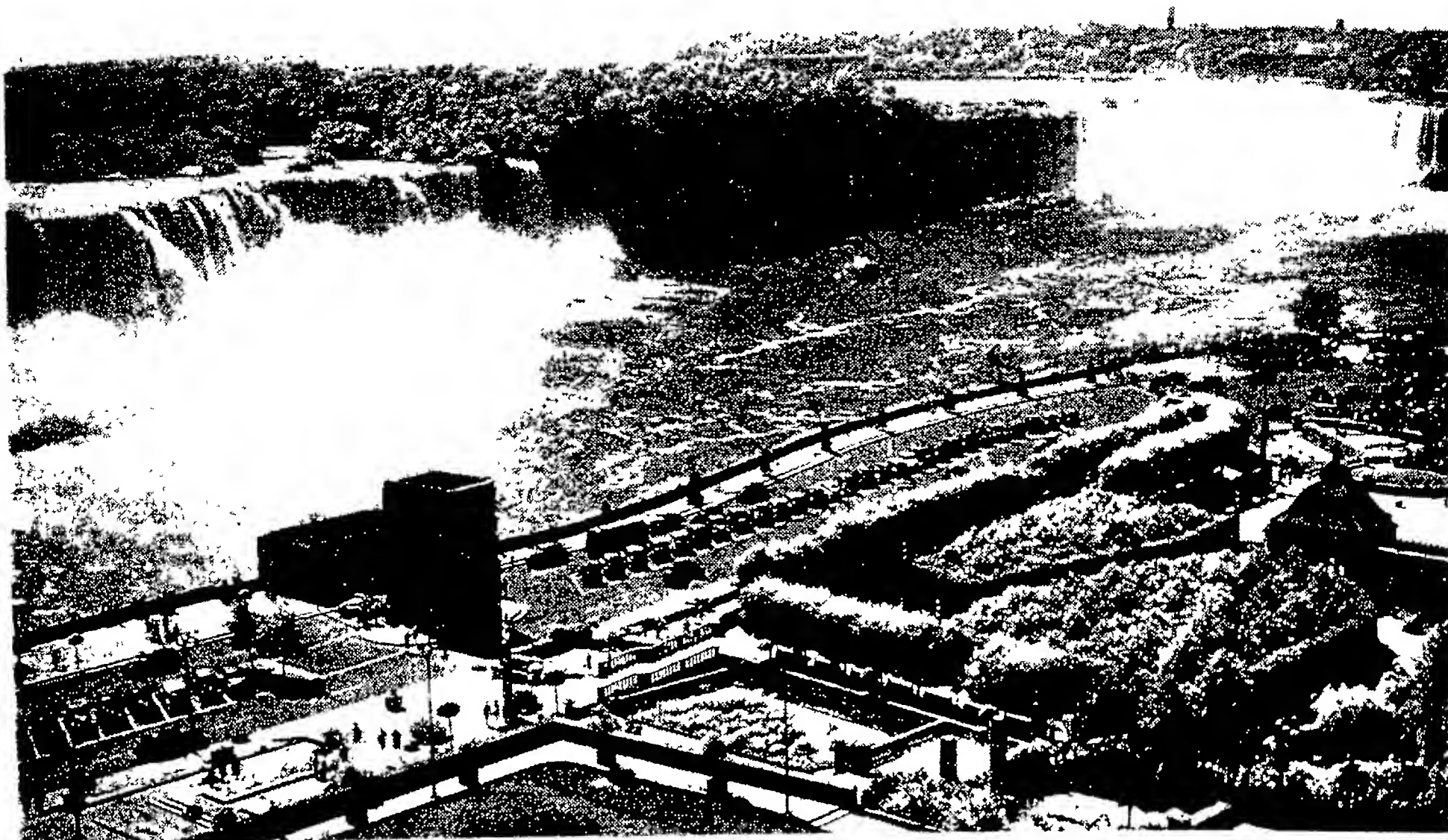


New Zealand Spinach. Branches with foliage and flowers

family Aizoaceae. It is widely distributed in the S. hemisphere. It is more or less prostrate, with alternate oval, fleshy leaves, and inconspicuous, imperfect yellow flowers. It is frequently grown in Europe as a substitute for real spinach (*Spinacia oleracea*).

**Next Friend.** In English law, adult person who lends his name to a legal proceeding brought by or on behalf of an infant or lunatic. The action is entitled "A. B. (an infant) by C. D. his next friend." The next friend need not be any relation of the infant; and before his name can be used, he must sign a consent for that purpose. If the infant plaintiff loses with costs, the next friend is liable to





Niagara Falls. The world-famous sight on the Niagara river, N. America, seen from the Canadian side. On the left is the American Fall, on the north side of the river, to the right the Horseshoe, or Canadian Fall, on the south side. Dividing the two is the thickly wooded Goat Island, a New York State park

the defendant for these costs, though as a rule these are allowed him out of the infant's estate. See *Insanity*.

**Ney, MICHEL** (1769-1815). A French soldier. Born Jan. 10, 1769, at Saarlouis, he was the son of a cooper. Joining the army in the ranks in 1788, he rose rapidly during the Revolutionary wars, and by 1796 had become a brigadier-general. The capture of Mannheim in 1799 added to his reputation, and in 1804 he was created a marshal, having fought at Hohenlinden and other battles against the Austrians, and conducted a diplomatic mission to Switzerland. His storming of the entrenchments at Elchingen in 1805 brought a dukedom, and he distinguished himself at Jena, Eylau, and Friedland.

Sent to Spain in 1808, Ney returned from the Peninsula in 1812, having quarrelled with Masséna, under whom he had been called upon to serve in the invasion of Portugal. His victory at Borodino in the Russian campaign in

1812 brought him the title of prince of Moskova, and to him is due the credit of saving the remnants of the French army in the retreat. In 1813 he fought at Lützen, Bautzen, and Leipzig, but he made his peace with the Bourbon regime in 1814. When Napoleon returned from Elba, Ney was sent to oppose him, but he deserted with his army to his old master, fought a drawn battle with Wellington at Quatre Bras, and two days later, as one of Napoleon's favourites, commanded the centre at Waterloo. For his desertion he was sentenced to death and shot in Paris, Dec. 7, 1815. Consult *Lives*, L. Blythe, 1937; P. Compton, 1937; *The Trial of Marshal Ney*, H. Kurtz, 1957.

**Ngami.** Lake in the N.W. of the Bechuanaland Protectorate. It was discovered by Livingstone in 1849. During recent years it seems to have been drying up, and the Okovango river which formerly discharged into it no longer does so. It has been proposed to divert rivers into the lake so as to make it into a reservoir for irrigation purposes.

**Niagara.** Town and tourist resort of Ontario, Canada. It stands on the Canadian side of the Niagara river, where it falls into Lake Ontario. It is 15 m. below the Falls, and is sometimes called Niagara-on-the-Lake. Known as

Newark, it was burned down by U.S. troops, Dec. 10, 1813, and was the first capital of Upper Canada. Pop. (1951) 2,108.

On the opposite (U.S.A.) side of the river is Fort Niagara. Here Hennepin and Lamott landed, Dec. 6, 1678. The French maintained a fort until it was taken by the British under Sir W. Johnson in 1759. It was an important point during the War of Independence, as it was in the war of 1812-14, by which time it had become the property of the U.S.A. On Dec. 29, 1813, a British force took it, but it was restored to the Americans. The magazine and other old buildings remain.

**Niagara Falls.** Famous falls on the lower portion of the Niagara river, N. America. The river, which is 33 m. long, separates in part the prov. of Ontario, Canada, from the state of New York, U.S.A., and flows from Lake Erie to Lake Ontario. During its course it makes a total descent of about 326 ft., 50 ft. being in the rapids above, and 111 ft. in those below, the Falls. The river is interspersed with islands, Grand Island being about 27 sq. m. in area. About 4 m. lower down the river is precipitated over a great limestone ledge.

The cataract is divided into two by Goat Island, the American Fall, on the N. side, being some



Ney





sultan Solymán in 1078, and the seat of an Eastern empire after the conquest of Constantinople by the Crusaders in 1204.

**Nicaea**, COUNCIL OF, 325. General council of the Church convened by Constantine I to settle the Arian controversy, determine the correct date for the observance of Easter, and consider other questions. Arius attended to defend his teaching; Athanasius championed the orthodox party. The council formulated the nucleus of the Nicene Creed (*q.v.*). The teaching of Arius was condemned (14 of his 17 supporters submitted). It was settled that Easter should be a Sunday. Arius was banished to Illyria, and his adherents exiled.

Another council held at Nicaea in 787 restored reverence for (though not adoration of) images. See Constantine VI; Irene.

**Nicaragua**. Central American republic bounded W. by the Pacific Ocean, E. by the Caribbean Sea, S. by Costa Rica, N. by Salvador and Honduras. The E. coast, of which the N. section is known as the mosquito coast, is backed by an alluvial plain. The central mts. rise to 7,000 ft. The E. is peopled by Indians and Negroes from the West Indies, the W. by Spaniards, Indians, and people of mixed Spanish and Indian origin. The E. produces bananas, coconuts, pineapples, the W. coffee, sugarcane, cocoa. Area 57,143 sq. m. Pop. (1955 est.) 1,245,000.

Extensive forests yield mahogany, cedar, gums, and medicinal plants. Over a million cattle provide hides for export. Gold and silver are mined; copper, tin, and zinc are known to occur. Managua is the capital; the W. ports Corinto and San Juan del Sur do more than two-thirds of the trade; the E. ports Bluefields, Pearl Lagoon, and Greytown (San Juan del Norte) are mainly interested in the fruit trade with U.S.A. The rly. runs inland from Corinto.

Nicaragua was peopled by the Aztecs, who have left here traces of their civilization. In 1522 the Spaniards landed and founded Granada, after which for nearly 300 years the country was under Spanish rule as a province of Guatemala. In 1821 it became an independent republic, and at the same time a series of wars began. These were with Costa Rica, Guatemala, and even Great Britain, which

claimed a protectorate over the Mosquito Coast, given up in 1860.

In the 20th century the U.S.A., taking an increasing interest in the affairs of the republic, found it advisable to intervene. Detachments of troops were sent to maintain the president, Adolfo Díaz, in power against his rivals. In 1927 peace was made between the contending factions, and a local constabulary under American officers was founded, but this did not prevent desultory fighting between U.S. marines and the nationalists. In 1931 Managua was devastated by an earthquake.

A new constitution, Nov. 1, 1950, provided for a congress with two houses: a chamber of deputies of 42 members elected for 6 years; and a senate of 16 senators elected for six years plus ex-presidents, appointed for life. The president is also elected for six years. The prevailing religion is R.C. Teaching of English in the schools is compulsory. In 1941 a university was established at Managua. Aviation is being developed, and there are several commercial and military airports. Roughly a third of the country grows timber, but gold and coffee are the main exports. See Central America. Consult An Economic and Financial Survey, W. W. Cumberland, 1928; Through Unknown Nicaragua, M. G. Palmer, 1946.

**Nicaragua**. Lake of Central America. It lies in the S.W. of Nicaragua, its S. end bordering on Costa Rica, and is separated from the Pacific by a narrow isthmus. Oval in outline, it measures 110 m. by 45 m. and has an area of about 2,990 sq. m. The depth varies between 15 ft. and 250 ft. It receives the surplus waters of Lake Managua at its N. end, and

discharges its own through the San Juan into the Caribbean Sea.

Surveys have proved that it was once continuous with Lake Managua and discharged into the Pacific. It contains islands, the largest of which is Zapatera. Sculptured stones, massive idols, and other antiquities have been discovered on its shores. Water fowl and alligators abound. Granada (*q.v.*) at the N.W. corner is the principal town on the lake.

**Nicaragua Canal**. Proposed ship canal between the Caribbean Sea and the Pacific Ocean through L. Nicaragua. In 1849 an American company obtained a concession from the Nicaraguan government; but no work was done, and the project remained in abeyance after the construction of the Panama Canal (*q.v.*).

**Nicaroa**. American Indian tribe found, at the time of the Spanish conquest, between Lake Nicaragua and the Pacific Coast as well as on the lake islands, with remoter offshoots on the Nicoya Peninsula and the west end of the Chiriquí lagoon; they had migrated to these areas from the north. Related to the Aztecs, they spoke the same Nahuatl language, and introduced into central America many features found in Mexico including similar religion, calendar, and laws, human sacrifice by tearing out the heart, and picture writing.

**Nice**. French city and pleasure resort, capital of the dept. of Alpes-Maritimes. It stands on the Baie des Anges, an opening of the Mediterranean, at the mouth of the Paillon. It is 740 m. by rly. S.E. of Paris, and is noted for its warm climate (mean temp. 60°).

It consists of a small medieval town, with ruins of a castle on the hill, a cathedral (1560), the church



Nicaragua arms



Nice, France. A view across the old town and port to Mont Boron. In the foreground is one of the three main roads leading to Monte Carlo

of S. Jacques (16th century), and other old buildings, and a modern city, most of it built in the 19th



Nice arms

century. Its main thoroughfare is the Promenade des Anglais, along the coast, which contains luxurious hotels and shops. Just off it is a remarkable memorial to the victims of the First Great War, carved out of the solid rock. The city has an airport, an observatory, museums, and libraries. There are some industries, such as the manufacture of chocolates and perfumes, but the tourist traffic is the chief source of the city's prosperity. It was founded about 300 B.C. as a satellite town of Marseilles, about 100 m. away, and has been since A.D. 300 the seat of a bishopric. It fell to Savoy in 1388, and in 1543 was pillaged by Frederick Barbarossa who carried off 2,500 captives. It changed hands a number of times before in 1860 it was ceded to France by Sardinia. Its recovery for Italy was one of the aims of Mussolini. After the Franco-Italian armistice of June, 1940, it lay in the demilitarised zone beyond the Italian zone of occupation. The Italians occupied it in Nov., 1942, German troops taking over from them Aug., 1943. It was liberated by the U.S. 7th army, Aug. 30, 1944, little damaged except in the harbour area. Pop. (1954) 244,360.

**Nicene Creed.** Statement of faith drawn up, 325, at the council of Nicaea, (*q.v.*). It was formerly maintained that the creed of Nicaea was based upon that of Caesarea, but it is rather a compendium of the baptismal creeds of Caesarea, Alexandria, Jerusalem, and Antioch. At subsequent councils additional phrases were added to the Nicene Creed (originally anti-Arian) in order to check other heresies, *e.g.* at Constantinople, 381, to refute the teaching of Apollinarius, Macedonius, and Marcellus; at Ephesus, 431, and Chalcedon, 451, against Nestorianism and Eutyches. Still later additions were made at the councils of Toledo, 447 and 589, and at Gentilly, 767, when the *filioque* clause was added, concerning the procession of the Holy Spirit from the Father and the Son, a claim not finally adopted in the Roman version of the Nicene Creed until 1014. This was and remains one of the

matters in dispute between the Western and Orthodox Churches. The use of the Nicene Creed has been confined to the Mass or Holy Communion in both Churches. As revised at Chalcedon, it is the definitive creed of Christendom. See Christianity; Church; Creed. Consult Chalcedon, J. S. MacArthur, 1931; History of the Creeds, F. J. Badcock, 1938.

**Nicephorus.** Name of three East Roman emperors. The first seized the throne from the empress Irene in 802, and was slain during an invasion of Bulgaria in 811. The second who had been an army commander, reigned from 963 until as the result of a conspiracy by his wife and nephew he was assassinated in 969.

Nicephorus III was emperor 1078-81. General of the army of the East under Michael VII. on the latter's resignation he was proclaimed emperor by the troops at Nicaea and crowned in Constantinople, April 3, 1078. During his reign the Seljuk Turks gained possession of Asia Minor except the coasts, and lower Italy fell into the hands of the Normans. His general, Alexius Comnenus (*q.v.*) who had hitherto loyally supported him, raised the standard of revolt, and deposed Nicephorus who retired to a monastery. He was the last emperor of the Armenian or Macedonian dynasty, which had lasted from 867. See Byzantine Empire. Pron. Niseeforus.

**Nicholas** OR NICOLAS (d. c. 342). Bishop and saint. A native of Patara, in Lycia, Asia Minor, he became archbishop of Myra, and opposed the Arians at the council of Nicaea. Buried in his cathedral at Myra, his supposed remains were reinterred May 9, 1087, in the church of San Nicòla, Bari, Italy, where they are visited annually by thousands of pilgrims. He is the patron saint of Russia and of seafarers, travellers, merchants, children, and those overtaken by sudden danger. The popular name Santa Claus is a corruption of S. Nicholas. His festival is kept on Dec. 6. In addition to the cathedral at Newcastle and a chapel in York Minster, more than 370 English churches are dedicated to him and he is the subject of notable works by Titian, Lorenzo Lotto, Raphael, and other artists, and of innumerable legends.

**Nicholas.** Name of five popes. Nicholas I, pope 858-67, largely developed the papal power, excommunicating Photius, the intruded patriarch of Constantinople, and various Frankish arch-

bishops who disputed the papal supremacy. Nicholas II, pope 1058-61, was the nominee of Hildebrand. The anti-pope Benedict X was deposed in his favour, and his chief work was to free the papal elections from the Roman factions and the control of the emperor. His name was Gerhard of Burgundy. Nicholas III belonged to the Roman Orsini family and was pope 1277-80. His policy was to strengthen the papacy by checking the imperial influence in Italy. He made the Vatican the official papal residence. Nicholas IV, who reigned 1288-92, was of humble family and the first Franciscan pope. His financial measures gave the college of cardinals independence.

**Nicholas V** (1397-1455). Pope 1447-55. Tommaso Parentucelli, a native of Liguria, was educated at Bologna and became its bishop in 1443. He was created cardinal in 1446, and elected pope the following year. His pontificate was notable for the architectural improvements carried out in Rome: the building of churches, the paving of streets, the provision of an adequate water supply by means of the ancient aqueducts on which Rome had once depended; the rebuilding of the Vatican and the basilica of S. Peter, and the foundation of the Vatican library, which Nicholas also enriched with many treasures. For Frederick III, 1452, he performed the last imperial coronation in Rome. Nicholas died March 24-25, 1455.

**Nicholas I** (1796-1855). Tsar of Russia. Born at Tsarkoe-Selo (now Pushkin), July 6, 1796, third



Nicholas I,  
Tsar of Russia

son of Paul I and Maria Feodorovna of Württemberg. he received a careful education under his mother's supervision, and in 1814-15 visited several European countries. On his return to Russia, July 13, 1817, he married Charlotte, eldest daughter of Frederick William III of Prussia. His elder brother Constantine renouncing his claim to the throne, Nicholas succeeded his eldest brother Alexander I, Dec. 1, 1825, and was formally crowned at Moscow, Sept. 3, 1826.

His accession was the occasion of a mutiny among Constantine's adherents in the army, in dealing with which he displayed great



personal courage and firmness. His foreign policy was directed towards the East, particularly the conquest of Turkey, which power he described as "the sick man of Europe." The war with Persia, concluded Feb. 28, 1828, much increased Russia's foreign territory. Nicholas died March 2, 1855, six months before the fall of Sevastopol in the Crimean War.

**Nicholas II** (1868-1918). Tsar of Russia. Eldest son of Alexander III, he was born at Tsarskoe-Selo, May 18, 1868, and educated in modern languages and science by Gen. Danilovitch, director of St. Petersburg academy. He travelled in the Far East during 1890-91, and narrowly escaped assassination in Japan. He succeeded to the throne, Nov. 1, 1894, and married princess Alix of Hesse, Nov. 14 O.S., 26 N.S.; she took the name of Alexandra (*q.v.*). Nicholas was crowned at Moscow in May, 1896.

At the beginning of his reign liberal influences gained great strength, and dissatisfaction with the government's policy was widespread. Kindly, desiring peace, and believing in the divine right of kings, Nicholas was unfitted for the task of his high office. Though convinced of his exalted mission, he allowed constitutional reforms, only to nullify them by subsequent actions. The empress's influence increased his fatalistic tendencies: he showed neither the courage to maintain autocratic rule, nor the resolution to adapt himself to the liberal movements of his time. The First Great War exposed the internal weakness of the régime, and the baleful influence of Rasputin hastened the final collapse. Nicholas signed on demand and without protest the decree of his abdication March 15, 1917. He retired to the Crimea, but was later arrested, transferred to Tsarskoe-Selo, and thence to Tobolsk where he was interned with his wife, son, and four daughters. The imperial family was then transferred to Ekaterinburg (Sverdlovsk) in the Urals, and with Kolchak's advance their fate was decided on by the Soviet leaders in Moscow. But the Communists of Ekaterinburg were determined to put the tsar and his family to death, and the commissar Yourkovsky was responsible for carrying out the assassination, July



Nicholas II,  
Tsar of Russia

16, 1918. The corpses were removed to an isolated spot in the neighbourhood of Ekaterinburg, and burnt. The tsar's correspondence with his wife appeared in English in 1929. Consult The Emperor Nicholas II, Sir J. Hanbury Williams, 1922; Nicholas II. C. Radziwill, 1931.

**Nicholas** (1841-1921). King of Montenegro. He was born Sept. 25, 1841, and educated mainly in Paris. In Aug., 1860, he succeeded his murdered uncle Danilo as prince of Montenegro and he was still reigning when the Great War broke out in 1914. The independence of his country was recognized in 1878, and in 1910 he took the title of king. In 1916, having joined in the First Great War on the side of Serbia, he was driven out and took refuge in France. He resigned his rights to Montenegro and died at Antibes, March 1, 1921. See Montenegro.

**Nicholas Nickleby**. Charles Dickens's second novel, published in monthly parts, April, 1838-Oct., 1839, with illustrations by Phiz. Designed first to expose the "monstrous neglect" of education and the crying evils of the cheap boarding-schools for boys at that time still common in the N. of England, the book contains some of Dickens's best known creations, including Wackford Squeers, master of Dotheboys Hall; the Cheeryble Brothers, benefactors of Nicholas; Vincent Crummles, the itinerant theatrical manager, and his family, and Mr. and Mrs. Mantalini. The novel was dramatised by E. Stirling, 1838 (before the monthly parts were completed, and much to Dickens's anger), and A. Halliday, 1875. A film version was shown in 1947.

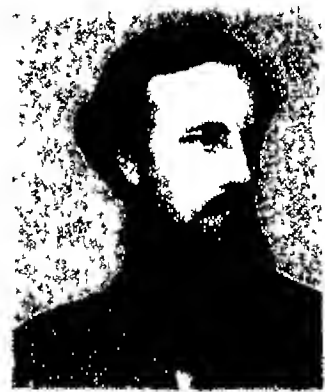
**Nichols**, (JOHN) BEVERLEY (b. 1898). British writer and critic. Born Sept. 9, 1898, he was educated at Marlborough, and Balliol, Oxford. His first novel, Prelude, appeared in 1920, and he became a best-seller with Crazy Pavements, 1927, and Evensong (later dramatised in collaboration with E. Knoblock), 1932. Other popular successes included Twenty-Five (autobiography), 1926; The Star-Spangled Manner (U.S.A. impressions), 1928; Down the Garden Path (gardening essays), 1932; The Fool Hath Said (religious essays), 1936; Men Do Not Weep, 1941; Verdict on India, 1944. Cry Havoc, 1933, was an emphatic statement of pacifism, but after the emergence of Hitler he changed his views. He wrote the book and composed the music (with V.

Ellis) of Cochran's Revue, 1930. His other plays include Avalanche, 1931, and Floodlight, 1937.

**Nichols**, JOHN BOWYER (1779-1863). British printer and antiquary. He was born in London, July 15, 1779, and educated at St. Paul's School, in 1796 entering his father's printing business. Long associated with The Gentleman's Magazine, he was its proprietor, 1834-56. He was one of the printers to Parliament. His chief work was the publication of county histories. Fellow of the Linnean Society, 1812, and of the Society of Antiquaries, 1818, he died at Ealing, Oct. 19, 1863.

**Nichols**, ROBERT MALISE BOWYER (1893-1944). British poet. Born Sept. 6, 1893, he was educated at Winchester, and Trinity College, Oxford. He made his reputation as a lyric poet during the First Great War when his first collection of poems Invocation appeared in 1915. Other volumes included Ardours and Endurances, 1917; Aurelia, 1920; Pisbo, 1934; Such was my Singing, 1942. He also wrote plays, including Guilty Souls, 1922; Wings over Europe (with Maurice Browne), 1929. Nichols, who had been professor of English literature at Tokyo university, 1921-24, died Dec. 17, 1944.

**Nicholson**, JOHN (1821-57). A British soldier and administrator. Born in Ireland, Dec. 11, 1821, he was educated at Dungannon. He entered the service of the E. India Co. in 1839, and in 1841 was taken prisoner by the Afghans, but he soon escaped, and in 1845-46



John Nicholson,  
British soldier

he served against the Sikhs, as he did when the war broke out again in 1848. Appointed a deputy commissioner in the Punjab after its annexation, Nicholson proved himself an administrator of extraordinary gifts, exerting such a marked influence over the natives that he was worshipped by a brotherhood of fakirs.

When the mutiny broke out in 1857, he checked the movement in his own district, and then took command of a mobile column and advanced to Delhi. Marching at a tremendous pace, he destroyed on the way a body of rebels near Gurdaspur, and then reached the besieged city. On Sept. 14, when leading the storming party, he was mortally wounded, and he died

Sept. 23, 1857. In the Punjab his fearlessness and justice were a constant source of wonder, and the impression he made on his contemporaries was summed up by Lord Roberts, who said that Nicholson impressed him more powerfully than any man he had ever met. See Indian Mutiny; consult also Life, L. J. Trotter, 1904.

**Nicholson**, SIR WILLIAM (NEWZAM PRIOR) (1872–1949). British artist. Born at Newark-on-Trent, he was educated there, and first became known to the general public by his illustrations to *An Alphabet*, and *An Almanac of Twelve Sports* (with Rudyard Kipling), 1898.



Sir W. Nicholson,  
British artist

and London types (with W. E. Henley), 1898. The posters he designed in collaboration with his brother-in-law James Pryde (the "Beggarstaff Brothers") were the first to draw attention to the artistic possibilities of the new medium. His later reputation was based chiefly on his ability as a portrait-painter, the best known examples of which included W. E. Henley, Gertrude Jekyll (both in the Tate Gallery), George Saintsbury, Walter Greaves, Ursula Lutyens, Lord Horder, and Marie Tempest. He also painted landscapes and still-lives; of the latter the best known is probably *The Hundred Jugs* (Liverpool Art Gallery). He was knighted in 1936, and his publications included *Characters of Romance*, 1900; *Clever Bill*, 1926; *A Book of Blokes*, 1930. He died May 16, 1949. Consult Life, M. Steen, 1943.

His son Ben Nicholson (b. 1894), educated at Tours, Milan, and Pasadena, U.S.A., became a leading member of the Constructivist group of painters. An abstractionist, he was concerned primarily with planes and surfaces. He held one-man exhibitions at the leading London galleries.

**Nicias** (d. 413 B.C.). Athenian statesman and general during the Peloponnesian War. In opposition to the democratic party, he strongly advocated bringing the war to an end while favourable peace terms could be obtained, and took a leading part in negotiating the short-lived peace of 421 B.C. Having already achieved several military successes, he was chosen chief commander of the expedition to Sicily in 415 B.C., though per-

sonally opposed to it. At first he met with some success, but the arrival of the Spartan Gylippus changed the situation, and though reinforced by Demosthenes, Nicias was defeated both by sea and by land. The Athenian force surrendered, and Nicias and Demosthenes were put to death. See Peloponnesian War; Syracuse.

**Nickar Nut** (*Caesalpinia bonduc* and *C. bonducella*). Seed of evergreen shrubs of the family Leguminosae. Natives of tropical sea shores, they are trailing plants with the leaves twice divided into small leaflets. The rusty yellow flowers form sprays, and are followed by prickly pods containing one to three large hard and polished seeds, which have a very bitter taste. In native Indian medical practice they are used as a tonic and fever cure, while the oil compressed from them is used in palsy. They are also strung together as necklaces and rosaries.

**Nickel**. One of the metallic elements. The name originated in Germany, where nickel is present in small amounts in the copper of the Harz mts. Finding the ore would not produce readily-worked copper, early miners named it *Kupfernickel*, Nicholas (or Old Nick) copper. The metal was isolated by Cronstedt in 1751. The element, chemical symbol Ni, is in the transitional group of the first long period of the periodic table, next to cobalt, iron, manganese, and chromium, while copper is its neighbour on the other side. It has an atomic number, 28; atomic weight, 58.69; melting point, 1,455° C.; boiling point, 3,075° C.; specific gravity, 8.90; electrical resistivity at 18°C., 11.8 ohm cm.; crystal forms (a) alpha-nickel, close-packed hexagonal, with lattice constants,  $a=2.49$  and  $c=4.08$  and an interatomic distance of 2.49 angstrom; and (b) beta-nickel, face-centred cubic, with lattice constant  $a=3.517$  and an interatomic distance of 2.486 angstrom.

The most important ore mineral of nickel is pentlandite, a nickel-iron sulphide. Less important are millerite, nickel sulphide; niccolite, nickel arsenide; and garnierite, a hydrated nickeliferous magnesium silicate. More than 80 p.c. of the world's nickel is produced in the Sudbury dist. of Ont., Canada, where pentlandite, (FeNi) S, occurs with pyrrhotite, FeS to Fe<sub>9</sub>S<sub>7</sub>, and chalcopyrite, CuFeS<sub>2</sub>; the average ore runs 3 p.c. nickel and 2 p.c. copper. This area also produces platinum

as a by-product. The ore-bodies at Sudbury are found near the bottom of a sheet of norite, a basic igneous rock, which has been intruded to form a large elliptical basin. Smaller nickeliferous sulphide deposits similarly associated with basic igneous rocks occur also near Petsamo in the U.S.S.R. and in Norway.

Garnierite, (NiMg) O.SiO<sub>2</sub>.xH<sub>2</sub>O, occurs very sporadically as small veins and pockets in weathered serpentine rocks in the French colony of New Caledonia. Before 1905 the world's chief source of nickel, these deposits supplied only some 6 p.c. of the total after production began in the Sudbury dist. Other producers of nickel are Greece, Burma, the U.S.A., French Morocco, and Brazil.

In Canada, the ore, after crushing, is concentrated by selective flotation, giving a copper concentrate containing over 50 p.c. of the copper and very little nickel, and a nickel concentrate containing nearly all the nickel and the rest of the copper, with iron and sulphur. After thickening, the nickel concentrate, which is about 4 p.c. nickel, is partially roasted in mechanical roasters, some of the sulphur being left, and is then smelted in reverberatory furnaces. Converter slag is added to the reverberatory furnace as a flux and the product separates into two layers, the top layer of slag being run off continuously to waste, as it contains less than 0.05 p.c. of copper and nickel, the lower layer being a copper-nickel matte about 16 p.c. nickel, 9 p.c. copper, 40 p.c. iron, 28 p.c. sulphur. The matte is "blown" in horizontal converters; the iron, which is oxidised by the air, combines with added silica, to form a slag which is then returned to the reverberatory furnaces.

The product may then be subjected to one of several processes. The Orford process depends on the fact that copper sulphide is much more soluble in sodium sulphide than is nickel sulphide. The matte produced by the converters is therefore crushed, mixed with nitre-cake or sodium sulphate and coke, and smelted. The product, when cast, separates into two layers, the "tops" being treated for recovery of copper, the "bottoms" for the production of pure nickel. Another process is to cool the matte from the converters in such conditions that the nickel and copper sulphides crystallise separately. After crushing, the sulphides can then be separated by



flotation. In both processes concentration is improved by repeating and the final product can be roasted to oxide and then reduced with carbon to a rather impure nickel, which can be refined by electrolysis; the anode sludge from this last process contains all the precious metals, which at Acton, Ont., are recovered and then purified.

Two other processes produce pure nickel directly from the bessemerised matte. About 20 p.c. of the Canadian matte is sent after a preliminary roast to Clydach, S. Wales, to be treated by the Mond process. The matte is calcined to remove most of the sulphur, leached with dilute acids to remove some of the copper, and dried. The nickel is then reduced by water gas at 350° to 400° C., the reduction being effected chiefly by the hydrogen present in the gas, so that the waste gas is high in carbon monoxide and thus suitable for the next stage, which depends on the formation of a volatile nickel carbonyl,  $\text{Ni(CO)}_4$ . This is volatilised at 60° C. and the resulting gas is then decomposed at 180° C. to pure metallic nickel and carbon monoxide gas. Some of the nickel carbonyl is condensed to a liquid in a medium-pressure plant, so as to yield, when it is decomposed, pure carbon monoxide for boosting the other gases. Bottoms from the Orford process are suitable for the Mond process. The Hybinette process, used in Quebec, involves the direct electrolysis of the cemented matte under special conditions with bagged anodes. The copper is first leached out and treated electrolytically in separate tanks.

The New Caledonian ore, a silicate containing little or no sulphur, and copper, is smelted with gypsum to give a nickel-iron matte, which is roasted, smelted with silica, bessemerised, and the pure matte again roasted to nickel oxide, which can be reduced with carbon to nickel.

Pure nickel is silvery-white with a high lustre. Much commercial nickel is hard and rather brittle, owing to the presence of small amounts of various impurities: the pure metal is malleable and ductile, rather harder and stronger than iron. It is magnetic, though less so than iron. Nickel has a high melting point and is resistant to abrasion. The addition of small amounts of manganese or magnesium as deoxidisers produces "malleable" nickel, which can be hot or cold-rolled, drawn into

wire, forged, and cast. Its resistance to corrosion makes it suitable for cooking utensils and laboratory and dairy apparatus. Pure nickel is used in many countries, *e.g.* India, for coinage. Iron, copper, zinc, brass, and many other alloys are electroplated with nickel, the plating being carried out in lead- or rubber-lined tanks; if high current densities are used, the solution is agitated by blowing compressed air into the tanks. Nickel-plating is used to improve the appearance of articles, and to increase their resistance to corrosion; it is also used as a basis for chromium plating, to give a very bright finish.

Of non-ferrous alloys of nickel, the widest in range are the cupro-nickels (*q.v.*). Nickel and copper are mutually soluble in all proportions. Up to 15 p.c. nickel, the alloys retain a coppery colour, but the 20 p.c. nickel alloy is white. Nickel silvers (formerly called German silver) are alloys of nickel with copper and zinc. They have a pleasant colour and many of them are stronger and more resistant to corrosion than is brass. They are the basis for E.P.N.S. (electro-plated nickel silver) in cutlery; and are also used architecturally. Nickel-chromium and nickel-chromium-iron alloys have many high temp. applications as they do not oxidise or corrode readily; they are used to make electric furnaces. Special nickel and chromium alloys were developed to withstand the very heavy corrosion and stresses in jet turbine engines. A very powerful permanent magnet material contains 10 p.c. aluminium, 18 p.c. nickel, 12 p.c. cobalt, 6 p.c. copper, and 54 p.c. iron. Alloys containing c. 36 p.c. of nickel have an unusually low thermal expansion.

But most nickel, which forms solid solutions with iron in all proportions, is used in steel alloys. The ordinary nickel steels are about 3.5 p.c. nickel; they are used for automobile parts, bridges, locomotive forgings and castings, etc. The steels with low carbon content are used for case-hardening. The nickel-chromium steels have excellent physical properties. Nickel is also sometimes added to cast irons. Various nickel salts are used in plating, and as catalysts. *See Alloy; Copper; Metallurgy; Mond; Nickel-Chrome Steels.*

**Nickel.** Popular name of U.S. coin, value 5 cents. Except for a period during the Second Great War when an alloy of silver, copper and manganese was used, the coin

has been made of 25 p.c. nickel and 75 p.c. copper.

**Nickel Blooms.** Group of hydrated and oxidised nickel minerals which form on the exterior of primary nickel minerals. They are all green in colour and are useful indicators of the presence of nickel mineralisation. The nickel blooms include anabergite, a hydrated nickel arsenate; morrenosite, hydrated nickel sulphate; and zaraitite, a hydrated basic nickel carbonate.

**Nicobar Islands.** Group of islands in the Bay of Bengal, forming with the Andaman Islands a centrally administered territory of India. Of the 19 islands 12 are inhabited. They lie about 75 m. S. of the Andaman Islands. Copra is produced, and coconut is a main item in the local diet. The group was ceded to Great Britain by the Dutch in 1869. During the Second Great War Japanese forces occupied the islands 1942-45. Area 635 sq. m. Pop. (1951) 12,009.

**Nicola, ENRICO DE** (b. 1877). First president of the republic of Italy. Born in Naples, Nov. 9, 1877, he studied law at the university there, and practised in criminal law. Deputy (non-party) for Afragola, 1909-24, he was president of the chamber 1920-23, and under-secretary of state under Orlando and Giolitti. Four times he declined an invitation from King Victor Emmanuel III to form a govt. During the fascist regime he retired from politics and resumed practice as a lawyer. He accepted a senatorship in 1932.

Acting on behalf of the committee of national liberation, he persuaded the king to abdicate in 1944. On the proclamation of the Italian republic he was elected. June 28, 1946, provisional president. He was confirmed in office, 1947, but ill-health led him to resign in May, 1948. He was president of the senate during 1951-57.

**Nicolai, CARL OTTO EHRENFRIED** (1810-1849). German composer. Born at Königsberg, June 9, 1810, he studied music at Berlin, and became organist at the chapel of the Prussian embassy at Rome, 1833. He composed a series of operas in the taste of the day, *e.g.* Enrico Secondo, and Rosmonda



Enrico de Nicola,  
president of Italy

d'Inghilterra, 1840, and was conductor at the court opera at Vienna, 1841-47. During his appointment there his operas *Templano*, 1841, and *Die Heimkehr des Verbannten*, 1844, were produced. His most popular work, however, was *Die lustigen Weiber von Windsor* (The Merry Wives of Windsor), first performed in Berlin, 1849, and in London (as *Falstaff*), 1864. The overture holds a permanent place in concert repertory. Nicolai died May 11, 1849.

**Nicolaitans.** Heretical sect which arose in the second century in the Christian Church. Their doctrines are associated with that of Balaam (Rev. 2, v. 14; Jude; 2 Pet. v. 1). Regarding as obsolete the injunctions of Deut. 23, vv. 17-18, and perhaps affected by the pagan rites connected with the worship of Dionysus and Aphrodite, they seem to have adopted a form of fanatical libertinism which attached to itself other heresies. The alleged leadership of the sect by Nicholas the deacon and proselyte of Antioch is unproven.

**Nicoll, Sir William Robertson** (1851-1923). A British journalist and theologian. Born at Lamsden, Aberdeenshire, Oct. 10, 1851, and educated at Aberdeen university, he was a Free Church minister from 1874 to 1885. While a minister at Kelso he was literary adviser to an Edinburgh publisher, and in 1884 was appointed editor to *The Expositor*. He founded *The British Weekly*, 1886; *The Bookman*, 1891; *The Woman at Home* (in cooperation with Annie S. Swan), 1893, and other periodicals, and acted as literary adviser to Hodder & Stoughton (*q.v.*). Under his editorship *The British Weekly* became a journal of rational influence. His weekly article, *The Correspondence of Claudius Clear*, was a popular feature.

He was not only a leader in the literary life of his time, but took a prominent part in social reform and politics. He was knighted in 1909, and made a companion of honour in 1921. He wrote extensively on literature and theology, his works including *Life of James Macdonell*, 1890; *The Return to the Cross*, 1897; *Letters on Life*, 1901; *My Father*, 1908; *Life of Ian Maclaren*, 1908, and *A Book-*

*man's Letters*, 1913. He edited *The Expositor's Greek Testament* and the *Works of Charlotte Brontë*. He died May 4, 1923.

**Nicolle, Charles** (b. 1866). French bacteriologist. He was born at Rouen, Sept. 21, 1866, and in 1895 became head of the bacteriological laboratory of his native city. In 1903 he was appointed director of the Pasteur Institute at Tunis, where he devoted himself to the study of the infectious diseases of N. Africa. In the course of that work he discovered, in 1909, the fact that lice transmit the bacillus of typhus, a fact subsequently confirmed by Ricketts and Prowazek 1910 and 1913 respectively. For this and other contributions to the fight against epidemics he was awarded the Nobel prize for medicine in 1928.

**Nicol Prism.** Prism of Iceland spar, used as a source of plane-polarised light. If a parallel beam of light strikes obliquely on the surface of a rhombohedron of Iceland spar it is split into two parts. The refractive index for one ray (the ordinary ray) is a constant, *n<sub>o</sub>*, 1.658 for sodium D lines, while for the other (the extraordinary ray) it varies between 1.486 and 1.658 according to the angle of incidence. Hence, except along the optic axis when both travel at the same speed, the extraordinary ray has a higher speed than the ordinary ray. The Nicol prism (named after William Nicol and invented in 1832) is a device used to separate the two rays so as to give a single beam of plane-polarised light. For this purpose a prism is sawn into two parts along a diagonal plane, perpendicular to the principal plane of one end face. The cut faces are cemented together with a thin transparent film of Canada balsam with refractive index (1.530) intermediate between those of the ordinary and extraordinary rays. With properly chosen crystal dimensions the ordinary ray strikes the balsam layer at an angle exceeding the critical and so is reflected towards the side of the crystal where it may be suitably absorbed.

**Nicolson, Sir Harold** (b. 1886). British writer, diplomatist, and politician. Son of the 1st Baron Carnock, he was born at Teheran, Persia, Nov. 21, 1886, and educated at Wellington, and Balliol, Oxford. He entered the diplomatic service in 1909. A member of the British delegation to the peace conference, 1919, when he was closely associated with Curzon, he was later attached to the legation at Tehe-

ran, 1925, and to the embassy at Berlin, 1927. Retiring in 1929, he turned to journalism. Entering



Sir Harold Nicolson,  
British writer

politics in 1931 as a member of the short-lived New Party, he represented W. Leicester as National Labour M.P., 1935-45, and was parliamentary secretary to the ministry of Information, 1940-41. In 1947 he joined the Labour party. A popular broadcaster, he was a governor of the B.B.C. 1941-46. He was knighted in 1953.

In his *Life of Lord Carnock*, 1930, he gave a brilliant exposition of the events and causes leading to the First Great War; and in *Peacemaking*, 1933, and *Lord Curzon: The Last Phase*, 1934, he examined 1920s diplomacy. His fine *Life of King George V*, 1952, set a new standard for official biographies. Others of his books were *Lives of Verlaine*, 1921; *Tennyson*, 1923; *Swirburne*, 1926; and *Dwight Morrow*, 1935; *Some People*, 1927; *Small Talk*, 1937; *The Desire to Please*, 1943; *The Congress of Vienna*, 1946. For many years he contributed a weekly essay to *The Spectator*. He married Victoria Sackville-West (*q.v.*), with whom he collaborated in *Another World Than This* (anthology), 1945.

**Nicomedia.** Ancient city of Bithynia, Asia Minor, the modern Ismid. It stands at the N.E. end of the sea of Marmara, and was founded 264 B.C. by Nicomedes I of Bithynia. After the quadripartite division of the Roman empire by the emperor Diocletian it became the seat of the government of Diocletian himself. Hannibal committed suicide by poison in Nicomedia, and it was the birthplace of the historian Arrian.

**Nicosia** OR LEVKOSIA. Capital of Cyprus. It stands in the centre of the island, 25 m. N.W. of the seaport Larnaca. It retains its high Venetian walls, and contains a fine Gothic edifice, once the cathedral of S. Sophia and now a mosque, and English and other churches. It is the see of a Greek archbishop and the seat of the British governor. Silk, leather, and woollen goods are manufactured. From the time of Constantine the Great until 1567 it was 9 m. in circumference, but the Venetians reduced it to 3 m. and fortified it, demolishing temples, palaces, and



Sir William  
Robertson Nicoll,  
British journalist



beautiful monuments. In 1570 it was taken by the Turks. Nicosia has one of the Middle East's chief airports. Pop. 34,463.

**Nicosia.** City of Sicily, in the prov. of Enna. Among the heights of Monte San Giovanni, at an alt. of 2,840 ft., 42 m. W.N.W. of Catania, it has a fine Norman cathedral and other churches. There are sulphur springs in the vicinity and salt is mined. A Lombard dialect is spoken. Destroyed by the Saracens, it was rebuilt by the Normans. In the Second Great War it was taken by the Allies July 29, 1943. Pop. (1951) 19,203.

**Nicot, JEAN** (1530-1600). A French diplomat and philologist. Born at Nîmes, the son of a notary, he became a lawyer in Paris in 1554. Favoured by Henry II, he was ambassador to Lisbon in 1559, and there became acquainted with the properties of the plant later known as tobacco, and called in his honour *nicotiana*, which he introduced to Catherine de' Medici. Recalled in 1561, he spent his later years in philological work. He died in Paris, May 5, 1600. See Nicotine.

**Nicotiana.** Genus of herbaceous plants, of which the most important are the tobacco plants. See Tobacco.

**Nicotinamide** ( $C_{10}H_{14}ON_2$ ). Yellowish oil used in 25 p.c. solution as a respiratory stimulant. It may be administered orally or by injection. Nicotinamide is also used in the treatment of the vitamin B deficiency disease known as pellagra (*q.v.*).

**Nicotine.** Liquid alkaloid extracted from the leaves of *Nicotiana tabacum*, the tobacco plant. Colourless, with a strong, stupefying, irritating odour, it is soluble in water, alcohol, and ether, and turns brown on exposure to the air. Tobacco contains from 1 to 8 p.c. of the liquid. Pure nicotine is one of the most deadly poisons known, rapidly causing death by paralysing the cardiac and respiratory centres in the brain. Nicotine was probably the first insecticide employed in Great Britain, in the middle of the 18th century for controlling plant lice on nectarines. Nicotine for insecticidal use is made from waste tobacco. See Tobacco.

**Nicotinic Acid.** Part of the vitamin B complex, which helps to prevent pellagra (*q.v.*). It has none of the action of nicotine.

**Nicoya, GULF OF.** Inlet of the Pacific Ocean on the W. coast of Costa Rica, Central America. Protected W. by the peninsula of Nicoya, it penetrates inland about



Niederwald, Germany. Colossal statue of Germania, erected 1877-83, in the Niederwald to commemorate the founding of the German empire

50 m., its breadth varying between 20 m. and 30 m. The coasts are mountainous and picturesque. On the E. shore is Punta Arenas, the Pacific port of Costa Rica. The village of Nicoya is about 80 m. N.W. of San José.

**Nichteroy** OR NITEROI. City of Brazil. The capital of the state of Rio de Janeiro, it is on the N. shore of the bay of Rio de Janeiro. In one of its suburbs is a popular sea-bathing station, Icaraty. Flannel, felt, soap, spirits, and tobacco are manufactured. Pop. est. 143,000.

**Nictitating Membrane** OR THIRD EYELID. Thin membrane at the side of the eye, which can be drawn rapidly across the cornea to clean the surface of the eye. It is best developed in the birds, but can also be observed in the reptiles and in some batrachians. In mammals generally it is but slightly developed, and it is rudimentary in man. See Eye.

**Nidd.** River of the W. Riding of Yorkshire, England. It rises on Great Whernside, and flows E., S.E., and N.E. through Nidderdale, past Pateley Bridge, Ripley, and Knaresborough to the Ouse, 8 m. above York. It is dammed above Pateley Bridge, and thus provides water for Bradford.

**Niedersachsen** (Ger., Lower Saxony). Region of Germany. Originally Niedersachsen embraced a wide area centred on Hanover, and taking in a large proportion of the Dutch, N. German, Pomeranian, and Thuringian pop. As such it was one of the ten *Kreise* of the Holy Roman Empire. The name was revived after the Second Great War and applied to a homo-

geneous area within the British zone of occupation; this was constituted a *Land* in 1946 (see Lower Saxony). Except for Hanover (*q.v.*), its capital, the towns of the region were less damaged by the war than those of surrounding areas. Economically the area is well balanced, numbers in agriculture and in trade and industry being about equal.

**Niederwald.** Mt. ridge of Germany. It forms the W. end of the Taunus at the upper end of the great gorge of the Rhine. Dominating the outlook from the river is the colossal statue, Germania, erected 1877-83 to commemorate the founding of the empire in 1871. S. is the Rheingau, famed for its mineral springs and vineyards.

**Niello** (Ital. from late Lat. *nigellum*, black enamel). Inlaying gold, silver, and bronze with a black metallic alloy of silver, copper, and lead, to which, when molten, there is added powdered sulphur. Since this alloy appears in the inlay as a deep black, silver has been the chief base on which the art has been practised, giving the greatest contrast between inlay and base.

The earliest extant example of the art is a 1st century bronze statue of a Roman general, in the British Museum. There are fine examples also in the church of the royal palace at Hanover; in S. Sophia, Istanbul; and in many churches in Italy and Russia. The art has been popular in India for many centuries. It is said that niello first suggested the method of printing from engraved metal plates. Certainly prints are in existence in the British and other museums of a niello portrait of the Virgin made in 1452, and now in the Opera del Duomo, Florence.

**Niemen, NEMAN, OR MEMEL.** River of the U.S.S.R. Its head-streams rise W. of Minsk, in White Russia S.S.R., and it flows generally W. to Grodno, then crosses into Lithuania S.S.R. to flow N. and W. past Kaunas. It enters Kursky Haven (Kurisches Haff) S. of Klaipeda (Memel), after a course of 550 m. The area of its basin is approx. 35,000 sq. m. Except for occasional obstructions, one being the Devil's Dam above Kaunas, navigation is practicable to Grodno. On a raft in the Niemen, Napoleon and Alexander I signed the treaty of Tilsit, July 7, 1807. In the First Great War the Russians withdrew to the Niemen after their defeat at Tannenberg, Aug., 1914, and in Feb., 1915, they were driven back to it again.

**Niemöller, MARTIN** (b. 1892). German ecclesiastic. Formerly a naval lieutenant and commander of a U-boat in the First Great War, he became a pastor in the Evangelical Church at Dahlem, Berlin. In 1933 he led a league of clergymen in their campaign against the appointment of Bishop Müller. Dismissed next year by the Nazis, he refused to retire, and continued to defy their attempts to subordinate the church to the state. When in 1937 a hundred Protestant clergymen were arrested, Niemöller was kept in custody. In March, 1938, he was sentenced to seven months' imprisonment, and was in Sachsenhausen concentration camp until released by the Allies in May, 1945. He was regarded as a martyr, but in 1947 a tribunal found that he had offered a degree of support to Hitler, and he was deprived of his status as a Nazi victim.



Martin Niemöller,  
German ecclesiastic

**Niepce, JOSEPH NICÉPHORE** (1765-1833). French physicist. Born at Chalon-sur-Saône, March 7, 1765, he was commissioned in the army in 1783 and during 1795-1801 was administrator of Nice. Retiring from the army, he joined his brother Claude (1763-1828) in mechanical and chemical experiments. The idea of obtaining photographs first suggested itself in 1813, and in 1827 Niepce succeeded in producing one on a metal plate, and was the first to evolve a photographic process in which the picture was unaffected by exposure to light. From 1829 he associated himself with Daguerre (*q.v.*). He died at Gras, July 3, 1833.

**Nierembergia.** Genus of perennial herbs of the family Solanaceae, natives of S. America. The stems as a rule are more or less procumbent, or even prostrate. The tubular flowers vary from a pale tint of violet to blue or white. Several species are cultivated, of which *N. frutescens* is shrubby, with slender leaves and pale blue flowers. *N. gracilis* is a downy plant with narrow leaves and white flowers, with yellow tube. *N. rivularis* has matted, creeping stems and spoon-shaped leaves: the flowers are white, tinged with yellow or rose.

**Nietzsche, FRIEDRICH** (1844-1900). German philosopher. Born at Röcken, in Prussian Saxony,

Oct. 15, 1844, son of a pastor of remote Polish extraction, he was educated at Naumburg grammar school, at the famous school of Pforta, and at Bonn and Leipzig universities. After a year's compulsory service in the artillery, he returned in 1868 to Leipzig, obtained his degree, and at 25 was professor of classical philology at Basel. Here he lectured with success until in 1879 ill-health compelled him to resign. The university granted him a pension of £120 a year, and with this and small private resources he lived mostly in Italy and Switzerland, until an apoplectic fit in 1888 was followed by insanity. He died in his sister's house at Weimar on Aug. 25, 1900.



Friedrich Nietzsche,  
German philosopher

He early became more attentive to the nature of the Greek genius than to the technicalities of Greek literature. He concluded, in *The Birth of Tragedy*, 1872, that the original genius of Greece, and the proper idea of mankind, was an instinctive and joyous creativeness—the Dionysiac element—which was later ruined by intellectualism and fixed moral rules—the Apollinist element.

Essentially a poet, Nietzsche never framed a philosophy, or systematically arranged his reflections on life, but his early ideal steadily developed. Against the prevailing intellectualism he passionately pleaded for strength, will, impulse. He knew little of science, and when Darwinism spread, he superficially acclaimed it as the gospel of eternal struggle, of the triumph of the strong.

He heatedly attacked pity and humanitarianism, and, on the ground that it had introduced

these things into Europe, bitterly assailed Christianity. Few understood or appreciated his works, and he imagined a group of "free spirits," sharing his ideas, who might one day exist. These become, in his writings, the Beyond-Men or Supermen. The code of morals of these "master spirits" must differ from the prevailing "slave-morality," and his later works were almost entirely devoted to a "transvaluation of values," or a reconsideration of moral standards. These are the main ideas of his chief works. *Human, All-Too Human*, 1876-80; *The Joyous Wisdom*, 1882; *Thus Spake Zarathustra*, 1883-84; *Beyond Good and Evil*, 1886; *Genealogy of Morals*, 1887.

His lyrical praise of struggle, and ultimately of war, and his scorn of humanitarianism and morality were powerful influences in Germany. *Pron.* Neetch-uh.

*Bibliography.* Works, 18 vols., Eng. ed. O. Levy, 1909-13; *Life and Work*, M. A. Mugge, 1908; *Philosophy of F. N.*, F. C. S. Schiller, 1913; *Philosophy of N.*, H. L. Mencken, 3rd ed. 1913; *F. N.*, G. Brandes, 1914; *Life*, 2 vols., E. Förster-Nietzsche, Eng. trans. A. M. Ludovici, 1912-15; Nietzsche, G. Abraham, 1933; *The Cult of the Superman*, E. Bentley, 1947; *N., an Approach*, J. Lavrin, 1948; Nietzsche, H. A. Reyburn, 1948.

**Nieuport** (Flemish *Nieuwpoort*). Town of Belgium, in the prov. of W. Flanders. It lies on the Yser, 10 m. S.W. of Ostend, and is connected by rly. with Dixmude and by canal with Furnes. Some fishing is carried on. Nieuport-Bains, 2½ m. N., is a small watering-place in the dunes at the mouth of the Yser.

Originally known as Santhoven, Nieuport was a trading centre of note in the Middle Ages, and was unsuccessfully besieged by the French, 1489. The Spaniards were defeated here in the battle of the Dunes by Maurice of Nassau, 1600. During the First Great War the town was completely ruined, losing its hôtel de ville, 15th century cloth hall, 12th-15th century church of Notre Dame, and Templars' Tower. At the extreme N. of the Western front and an important point in the battle of the Yser, Oct., 1914, it was held by French troops after the Belgians were withdrawn, and in the summer of 1917 by the British 4th army. After the war the buildings were restored in their original styles. During the evacuation of Dunkirk in 1940 by



Nierembergia. Flowers and foliage  
of *N. rivularis*



the B.E.F. Nieuport was included in the perimeter defences. It was then occupied by the Germans until liberated by the 1st Canadian army on Sept. 8, 1944.

**Nieuwveld.** Mt. range in the Cape prov., S. Africa. Running W. to E. south of the Great Karroo, the mts. form an escarpment joined through the Stormbergen and Sneeuwbergen with the Drakensbergen, and are the edge of the great African plateau.

**Nièvre.** Dept. of France. In the centre of the country, its area is 2,658 sq. m. It includes the mountainous district of Morvan in the E., and less elevated regions in the N., while in the W. the dept. is flat. The chief rivers are the Loire, Nièvre, Allier, Aron, Cure, and Yonne. An agricultural, but not very fertile, district, it produces some cereals and potatoes; cattle and sheep are reared in large numbers. There are some vineyards and much of the land is forest. There are coal and iron mines in the dept. and some large ironworks. Nevers is the capital; other places are Château Chinon, Clamecy, Cosne, and Fourchambault. Nièvre formed the major part of the old province of Nivernais. Pop. (1954) 240,078.

**Nigella.** Genus of annual herbs of the family Ranunculaceae, native to the Mediterranean region. Popularly called Love-in-a-mist and Devil-in-a-bush, they bear blue, white, and yellow flowers surrounded by graceful feathery foliage.

**Niger.** Territory of French West Africa, lying to the S. of the Sahara, and N. of British Nigeria. It was acquired by France in 1912, made into a territory by decrees of 1922 and 1926. Desert in the N., it is well wooded cattle country in the S., its chief crop being ground nuts. Big game abounds. The capital is Niamey. Area 499,410 sq. m. Pop. (1954) 2,328,908 (2,371 white).

**Niger.** A river of W. Africa. It rises in the mountainous zone on the frontiers of Sierra Leone and French Guinea, near Timbukunda. After a devious course of some 2,500 m., during which it passes through French territory and N. Nigeria, it enters S. Nigeria at Idah, and falls into the Gulf of Guinea through a large estuary in the central portion of the coast of S. Nigeria. From its source the main river flows N.E. to its junction with the Milo, and continuing in the same general direction, reaches the neighbourhood of Timbuktu, whence the direction

is mainly E. almost to long. 0°. From this point it flows generally S.E. to the sea. The principal tributaries are the Milo, Bakhoy, Sokoto, Kaduna, and Benue. The delta begins near Abo, about 80 m. from the sea, and has numerous mouths, the chief being the Nun, Forcados, and Bonny.

The headwaters are connected with the coast by the French rly. from Kankan, on the Milo branch, to Kurussa, on the main river; and across French Guinea to the port of Konakry; and by the rly. from Kulikoro to Bamako, thence to Kayes and Dakar. The river is navigable between Kurussa and Bamako, and for a short distance above the latter place. It is again navigable from Kulikoro and Ansongo by small launches, and under favourable circumstances as far as Niamey. In Nigeria the river is divided into two navigable sections, broken by the rapids N. of Jebba, although above Sekachi it is navigable as far as Gaya in French territory and with intervals up to Ansongo. The lower river suits small ocean-going vessels as far as Baro, but navigation is increasingly difficult.

Although known to the Greeks and mentioned by Ptolemy and later writers, the Niger generally was supposed to run W. instead of E., and is so marked on many of the old maps. In 1795 Mungo Park, under the auspices of the African Association, was sent to explore its sources, and travelled along the river from the Gambia estuary to Segou. In 1805 he again reached the Niger, but was killed near Bussa, when crossing the rapids beyond that place.

In 1822 Hugh Clapperton and Dixon Denham started from Tripoli and reached Bornu and the country N. of the Niger. During another expedition in 1825 Clapperton died at Sokoto, but his companion, Richard Lander, again explored the lower Niger and determined its exact course. Other expeditions followed, notably those under Macgregor Laird in 1832, Lander in 1834, Richardson and Barth, who crossed from Tripoli, Zweifel, and Moustier, in 1879, and Brouet, who in 1885 discovered the Timbi source.

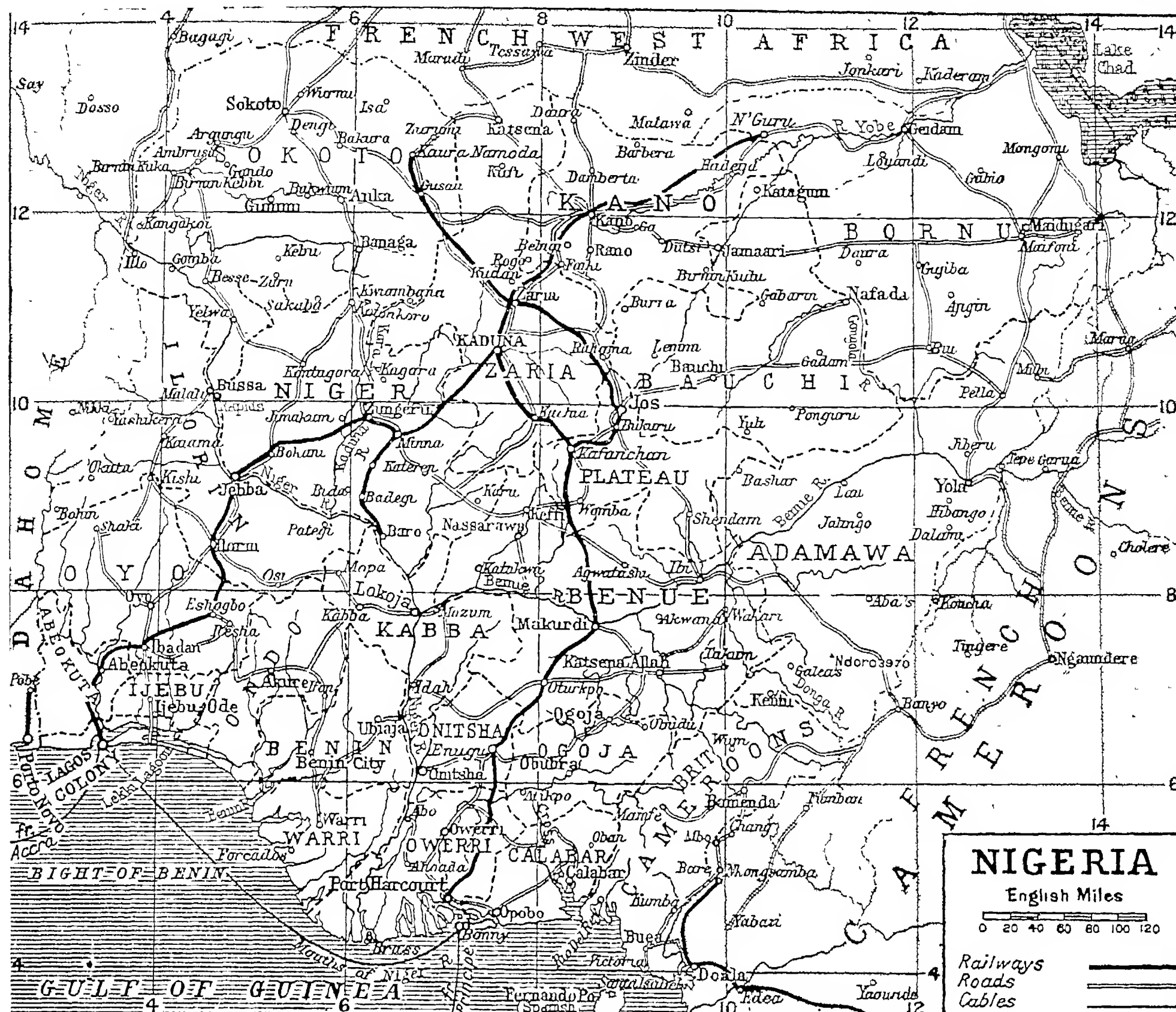
**Bibliography.** Travels, Mungo Park, 1799; Journal, R. and J. Lander, 1833; Travels and Discoveries, H. Barth, 1857-58; The Niger Sources, J. K. Trotter, 1897; Mungo Park, P. Germann, 1924.

**Nigeria, FEDERATION OF.** British territory in W. Africa. British influence began around Lagos,

which was bought from a native chief in 1861, and achieved a separate existence in 1886 as the colony and protectorate of Lagos. That year the National African Co., which had commenced operations in the Niger valley, became the Royal Niger Co.; its activities continued for 13 years, and it surrendered its charter in 1899. Two protectorates of N. and S. Nigeria were inaugurated on Jan. 1, 1900. In 1885 the protectorate of the Oil, i.e. palm oil, rivers had been established; this became the Niger Coast protectorate in 1893, and in 1900 was absorbed by S. Nigeria. In 1906 S. Nigeria and Lagos were joined, and in 1914 the colony and protectorate of S. Nigeria was combined with N. Nigeria, the whole being divided into three regions (Northern, Eastern, and Western). In 1954 these regions and the part of Cameroons under U.K. trusteeship were formed into the federation of Nigeria, which was placed under a governor-general, assisted by a council of ministers and an elected house of 184 representatives (to which up to six special members could be appointed); the chief secretary, the attorney general, and the financial secretary of the federation were *ex-officio* members of both the council and the federal house. Each region had its own executive council under a regional governor to deal with matters of local administration.

The lower Niger and its great tributary, the Benue, divide the country into three parts: the wide land N. of both rivers on the low plateau of N. Africa with the central heights attaining 3,000 ft. over a wide area; the S.W. corner bounded by the Niger, the sea, and Dahomé, where are the Yoruba Highlands; and the S.E. corner, much lower except in the area detached from Cameroons. The Lagos coast was once known as the Slave Coast, but in 1917 slavery was abolished as a legal status; slave dealing had ceased, and the slave markets were suppressed by the native rulers. The trade lasted longest in the N., on the edge of the Sahara, where the Mahomedan Hausas and Fulas long retained the system of domestic slavery. In religion the people are more animists or Christians than Muslims.

The S. is tropical forest as far inland as Ibadan; the rest is savanna. Rainfall is heavy during summer, reaching an annual average of 151 ins. at Bonny. The S. yields palm oil and kernels,



Nigeria. Map of the British West African protectorate traversed by the rivers Niger and Benue, and one of the most densely populated parts of Africa

rubber, ground-nuts, hides, coffee, cocoa, kola nuts, etc.; in the N. is the tin-mining area. Coal is mined at Udi. Silver, galena, manganese, monazite, and uranium have been found, and during the Second Great War the mining of columbite was developed. Trade passes seawards by many ports, of which the chief are Lagos, Port Harcourt, Bonny, and Calabar; it concentrates from the French territory to the N., W., and E. on Kano, long a famous caravan centre, and now the railhead for Lagos. There are 1,900 m. of rly., 36,000 m. of roads (of which 2,500 m. is tarred). Area approx. 373,250 sq. m. Pop. (1953 est.) 31,171,000—denser than any other part of Africa except the Nile valley.

Nigerian troops to the number of 96,000 fought in the Second Great War, in E. Africa and Burma; but the colony's principal war contribution was increased production of foodstuffs, minerals, especially tin, and rubber. Capital expenditure was provided

by the Colonial Development and Welfare Act of 1940; conscription of labour was introduced, but was discontinued in 1944. In 1946 a development plan was adopted, covering schemes for improved water supplies, telecommunications, waterways, and health and education services, and wide extensions in forestry, cattle-raising, and agriculture. Of the estimated cost of £55,000,000, grants provided £23,000,000, while £17,000,000 was raised by loans.

Leprosy is an important problem in Nigeria, where there are over 400,000 known lepers. Experiments carried out here were responsible for the development of a new drug (D.D.S.) now in use throughout the world (see Leprosy). See also Abeokuta; Bauchi; Benue; Lagos; Niger.

*Bibliography.* N. under British Rule, Sir W. Geary, 1927; Nigeria, W. R. Crocker, 1936; History of Nigeria, A. C. Burns, 3rd ed. 1942; Native Economics of Nigeria, D. Forde and R. Scott, 1946; N.: Outline of a Colony, C. R. Niven, 1946.

**Night.** Interval between sunset and sunrise. Its length varies according to the seasons and the latitude. At the equinoxes it is twelve hours in length on every part of the earth, lengthening afterwards in one hemisphere and shortening in the other until the solstices. At the poles the period of night lasts six months.

**Night Blindness.** For this condition see Blindness.

**Night Club.** Place of entertainment open after the closing of normal licensed premises, for members and their invited guests only. Food and alcoholic drinks are available, and there is generally a band for dancing and a cabaret show. The first night clubs were opened in London in 1919 to provide entertainment on the lines of Paris cabarets without contravening the licensing laws; they spread to the U.S.A., but American clubs were not restricted to members, and the term there became synonymous with cabaret. Most London night clubs are



conducted on the "bottle-party" system, whereby a member orders in advance a whole bottle of liquor from a wine-merchant, and has it stored at the club and produced on request.

During the Second Great War chief officers of police were given power to close clubs where there was drunkenness or disorderly conduct, or to limit the hours of opening if the club was frequented by war workers.

**Night Fighter.** Type of aircraft developed by the R.A.F. in the Second Great War to combat night air attacks. Unlike the day fighter, which is generally a single-seater, the night fighter carries a pilot and navigator. The first British example was the Boulton-Paul Defiant, which was equipped with a power-operated gun-turret and, after service as a day fighter in the battle of Britain, went into action at night early in 1941. These aircraft at first had to rely upon ground searchlights picking up and illuminating enemy bombers, but later were themselves fitted with searchlights. With radar they could track down and attack bombers unseen. Eventually twin-engined night fighters. Beaufighters and Mosquitos, were introduced, their range, armament, and speed making night bombing too costly for the Germans, whose lack of efficient night fighters was one reason for the success of the R.A.F. in bombing German cities by night. See Air Defence; Fighter; Radar.

**Night Heron** (*Nycticorax nycticorax*). Species of small heron, common on the Continent of Europe and widely distributed in the Eastern hemisphere. About two ft. long, with greenish plumage on the back, purple breast, and long white plumes at the back of the head, it commonly nests in colonies in low trees, is usually found in swampy woods, and is most active at night. It is doubtful if it ever bred in Great Britain, which it visits in the spring and autumn. The name is given in America to another species, *N. naevius*. See Boatbill; Heron.

**Nightingale** (*Luscinia megarhynchos*). Bird of the thrush family, famous for its sustained and varied

song, indulged in far into the night as well as by day. A native of Europe from England to its eastern borders and into Asia Minor, and from Copenhagen to N.W. Africa, its length slightly exceeds 6 ins. Its upper parts are russet brown and the underside is brownish white. Arriving in England in mid-April,

the bird ranges only as far N. as S. Yorkshire, and as far W. as the valley of the Exe. It visits parts of S. Wales, but not Ireland.

The nest, composed of dead leaves and grass, is placed on or near the ground in the tangled vegetation of copse or hedgerow, and contains four or five olive-tinted, polished eggs. While the hen is sitting the cock frequently sits on a branch above and pours out his rich song, undeterred by the presence of an appreciative human listener only a few feet away. The nightingale feeds chiefly on the ground, consuming worms and various insects, and later the wild berries. The song is not heard much after mid-June; but the soft *wheet* call-note and the alarm *kur, kur* denote its presence until it departs in Aug. or Sept.

The Eastern or thrush-nightingale (*L. luscinia*), of Europe E. of the Rhine, is somewhat larger, with the breast spotted faintly; and the Persian nightingale (*L. hafizi*) occurs farther E. from the Caucasus through Persia to Sinkiang and occasionally to India.

The nightingale figures in the mythologic story of Tereus and Philomela, the latter being transformed into the bird, whose plaintive song is supposed to be a recital of her wrongs. It inspired Keats to the most celebrated ode in the English language. The name is derived from A.S. *nihtegale*, meaning singer of the night. See Eggs colour plate.

**Nightingale, FLORENCE** (1820-1910). British reformer. Born at Florence, Italy, May 12, 1820, she was the younger daughter of W. E. Nightingale, a moneyed, cultured, well-connected man. Her maternal grandfather, William Smith, was a strong advocate of

the abolition of slavery. Florence spent her early life in the family homes first at Lea Hall, Derbyshire, then (from 1825) at Lea Hurst, Derbyshire, in summer, and Embley Park, Hants, in winter. She was brought up to the life of visiting, entertaining, and casual philanthropy then customary for young

ladies of leisured family, but in addition received a wide education not usual at that day. In 1845 she planned to become a nurse at Salisbury Hospital, and then to set up a sort of "Protestant sisterhood, without vows, for



Nightingale. Male specimen of the European song-bird



Florence Nightingale

Augustus L. Egg, National Portrait Gallery, London

women of educated feelings." But these plans came to nothing. Attended by a manservant, however, she was allowed to visit ragged schools, and during travels on the Continent visited hospitals in Rome and Paris, and contrived in 1851 to take a three months' training as a sick nurse at the institute of Protestant deaconesses at Kaiserswerth on the Rhine.

During the next year she wrote her *Suggestions for Thought to Searchers after Religious Truth*, amplified and printed (but never published) in 1859. In it she set down her own struggle to reach a philosophy through religion, and a poignant record of the frustration suffered by a woman of energy and active mind in her day. The Crimean war broke out in March, 1854, and the reports sent home by war correspondents of the neglect of the wounded and of the need of devoted women



Night Heron. Example of the European species

W. S. Berridge, F Z S.

to nurse them led her on Oct. 14 to offer her services to the War office. On the same day her friend Sidney Herbert, then secretary for War, wrote asking her if she would go out and supervise a nursing service. She acted immediately, chose her company, and on Oct. 21 sailed for Constantinople taking with her 38 nurses. She reached Scutari on Nov. 4, and found the barracks hospital dismal and dirty. There were no stores, no utensils, no soap, no towels, no hospital clothing. The sick and wounded lay in their uniforms, filthy and verminous.

Florence Nightingale's arrival was not welcomed; but with an outlet at last for her energy and organizing ability she set to work and by Dec., when 46 more nurses came out, she had produced some sort of order. It was said that she was on her feet 20 hours in the day; she allowed no woman but herself to be on duty at night, when the place of the other nurses was taken by orderlies. It was those night vigils that earned her the name the Lady of the Lamp. Defects of sanitation remained, and only after the death rate from cholera, typhus, and dysentery had risen in Feb., 1855, to 42 p.c. of cases in hospital was she able to persuade the War office to insist on reform. This brought the death rate down by June to two p.c. Then she made a tour of the hospitals about Balaclava. She remained at Scutari (Uskudar) until Aug., 1856, and returned to England to find herself a popular heroine. She asked that the recognition of her work should be the setting up of a school of nursing; £50,000 was collected, and the Nightingale school and home for nurses was established at S. Thomas's hospital, 1860.

The strain of her service in Scutari had affected her health and she was henceforth a semi-invalid; but from her home in London she continued to write and advise, with the authority born of her experience, on all aspects of nursing and sanitation. In 1907 she received the O.M., the first woman to be thus honoured. She died at her home Aug. 13, 1910. Her notes on nursing, first published in 1858, were issued in a revised edition, *The Art of Nursing*, 1947. *Consult Lives*, S. I. Tooley, 1905; E. T. Cook, 1913; G. C. Willis, 1931; C. Woodham-Smith, 1950; *Eminent Victorians*, L. Strachey, 1918.

Irene Clephane

**Nightjar** (*Caprimulgus europaeus*). Migratory bird common in Great Britain during the



Nightjar. Specimen of this insectivorous bird, on the wing

summer, and spending the winter in Africa as far S. as the Cape. In shape it resembles a large swift, with a large, flat head and a wide, gaping mouth. It is called nightjar from its peculiar whirring cry, but flies silently by night in search of insects. The term goatsucker perpetuates an ancient and widespread delusion, due to its habit of hawking for flies round the udders of animals. The bird is about 10 ins. long, and its colour is grey, spotted and barred with yellow and brown. It lays two beautifully marbled eggs on the bare ground, usually close to a small bush or tuft of heather. The nightjar family includes many genera and about 90 species, including the N. American whip-poor-will. See Eggs, colour plate.

**Nightmare.** Dream accompanied by feelings of terror. Anciently supposed to be caused by an evil spirit, it was until recently believed to be due to digestive disorder. The newer theory of dreams regards this as only a precipitating cause, and ascribes nightmare to psychological processes. It is believed that certain primitive wishes in the subconscious mind are forcing themselves into the consciousness, and if they are not sufficiently disguised to produce the ordinary form of dream, but are likely to become clear to the sleeper, he awakes in a state of terror. See Dream.

**Nightriders.** Name given to terrorists in Kentucky, U.S.A., who in 1908 made destructive raids on the tobacco-growing fields. They were planters who had refused to come into a scheme for pooling crops so as to get the best possible price. In clashes

between the Nightriders and growers inside the organization, some lives were lost, and only about one-fifteenth of the normal crop was grown next year.

**Nightshade.** Folk-name for several species of plants. Woody nightshade or bittersweet is *Solanum dulcamara*, and common nightshade is *S. nigrum*, while enchanter's nightshade is *Circea lutetiana*. Deadly nightshade (*Atropa belladonna*) is a perennial herb of the family Solanaceae, a native of Europe and N. Africa. Several annual stems proceed from the same fleshy rootstock, and form a bush 3 or 4 ft. high, with large oval leaves. The large, solitary, bell-shaped flowers are dull purple



Nightshade. *Atropa belladonna*, or deadly nightshade

in colour, and droop on short stalks. The fruit is a large, shining black, globular berry. The whole plant is poisonous and smells unpleasantly. Hyoscyamine and atropine are obtained from the rootstock lifted in autumn, and from fresh leaves gathered when the plant is in flower.

**Nigri Sembilan** (nine states). Collective name of a group of states in the Malay Peninsula, formerly one of the Federated Malay States and now a part of the federation of Malaya (*q.v.*).

Nigri Sembilan came under British rule 1873, and comprised the states of Sungei Ujong, Sri Menanti, Jelebu, Rembau, Johol, and Tampin. It entered the F.M.S. 1895. Area approx. 2,550 sq. m.; estimated pop. 296,000. It lies in the S.W. of the peninsula. The surface is mountainous in the interior, rising in Gunong Ledang, or Mt. Ophir, to 3,845 ft. The chief harbours are Port Dickson and Linggi. The valleys are fertile and the hill slopes heavily timbered, the principal products being timber, rice, rubber, spices, tapioca, and coffee. Tin, gold, and other minerals are mined. Seramban is the chief town.

**Nigrosine.** Black dye closely related to induline (a blue-black dye). By various modifications a long series of blue to black dyes soluble in spirit is produced. By sulphonation they are converted to water-soluble forms and find varied use in industry. Nigrosine is put into spirit stains and varnishes and in polishes. Used



in dyeing silk and in calico printing, it gives grey or blue-grey shades. *See* Dyes.

**Nihilism** (Lat. *nihil*, nothing). Name given to the tenets of the Russian revolutionary socialists. Though there had been for forty years parties holding similar views in Russia, it was due to Turgenev, in 1862, that the term nihilism came to be used. The attitude of mind was the result of the terrible conditions of living of the vast mass of the Russian people, and the main object of those who held it was the overthrow of government by force of any kind. The nihilists aimed at freedom of the press, freedom of speech, religious equality, equality of treatment for women, the land for the people, etc.

The nihilist movement began to become a force in 1860-70, and owing to its violent methods wholesale arrests were carried out during the next decade, some 4,000 people being tried in Russia in 1877-78 alone. In the latter year an attempt was made to assassinate Gen. Trepov; Gen. Mezentsev was killed in St. Petersburg; and in 1879 Prince Kropotkin was assassinated, and attempts were made to kill the tsar, Alexander II. His assassination in 1881 was followed by methods of extreme severity against the nihilists, who were gradually crushed, and new organizations came into existence which hoped to achieve the aims of nihilism by more constitutional means. *See* Anarchism. *Consult* *Memoirs of a Revolutionist*, P. A. Kropotkin, 1899.

**Niigata.** Seaport of Japan, on the W. coast of Honshu. It is the capital of Niigata prefecture and is near the mouth of the Shinanogawa. Its harbour is shallow, silts up with river alluvium, and is exposed to N. winds. Dredging operations have made some improvement. The trade is almost limited to traffic with Vladivostok and other Siberian harbours. Exports are mainly rice and soya beans, which are grown extensively in the prefecture. There are ironworks and chemical manufactures. The town is intersected by many canals. It is connected by rly. with other W. coast ports, Tokyo and Osaka, and is the port for the island of Sado, 32 m. away. Pop. (1955 est.) 262,920

**Nijinsky, VASLAV** (1890-1950). Russian dancer. Born at Kiev, Feb. 28, 1890, he was trained at the Imperial ballet school of St. Petersburg, and made his début at the Marinsky theatre, 1907.

Two years later he went with Diaghilev to Paris, achieving spectacular success in *Scheherazade*. Matchless technique, dramatic ability, and an unusual ability to jump (he was probably alone in being able to perform ten *entrechats*) made him the greatest male dancer of his age. As partner of Karshavina in *Le Spectre de la Rose* he was outstanding. At Covent Garden in 1911 he gave brilliant performances in *Petrouchka* and *Carnaval*. He was also the choreographer of *L'Après-midi d'un Faune*, 1912, and *Le Sacre du Printemps*, 1913; and during his last years evolved a system of choreographic notation.

After quarrelling with Diaghilev he formed his own company in 1913. He was interned in Austria in 1914, his release being secured by Diaghilev whose company he rejoined in the U.S.A. in 1916. Symptoms of mental disorder appeared, however, and after 1918 he never danced again. He lived in a Swiss sanatorium for 20 years, then in Budapest, Vienna, the U.S.A., and from 1947 in England, where he died April 8, 1950.

**Nijmegen, NIMEGUEN, OR NYM- WEGEN.** Town of the Netherlands, in the prov. of Gelderland. It lies on the left bank of the Waal, 10½ m. by rly. S. of Arnhem, and is a rly. junction. The suburb of Lent is on the right bank. Industries include brewing and the manufacture of leather and tobacco.



Vaslav Nijinsky,  
Russian dancer

The rly. stn. was severely damaged, and several acres of the town near the station were flattened, in the Allied air attack that preceded the airborne landing (*v.i.*) of Sept., 1944. The great church, dedicated to S. Stephen, a Gothic building, was begun c. 1270, with work of the 14th and 15th centuries. The town hall, in the Renaissance style of the 16th century, restored in 1882, contained a museum of antiquities. There is an R.C. university. Pop. (1956) 120,678.

Nijmegen was known to the Romans as *Noviomagus*, and was a seat of the Carolingian, Franco- nian, and Hohenstaufen emperors. A free town of the Empire, it joined the Hanseatic League, and in 1579 the union of Utrecht. Held by the Spaniards, 1585-91, it was taken by Turenne in 1672.

In German occupation from May, 1940, Nijmegen was one of three places at which Allied airborne troops were dropped on Sept. 17, 1944, in the attempt to cross the Lower Rhine. Armoured units of the British 2nd army came up, and with the assistance of U.S. parachutists, who crossed the Waal in rubber boats under withering fire, secured the 600-yd. road bridge, Sept. 20, after a fierce 24-hr. battle, in time to remove the enemy's demolition charges. An attempt by German underwater swimmers to blow up both the road and the railway bridges on the night of Sept. 28-29 was frustrated. *See* Arnhem.

**Nijmegen, TREATY OF.** Peace that ended the war between France and a coalition formed by the Empire, Spain, and the Dutch Republic. France and Holland



Nijmegen. Air view of this Netherlands town showing the railway bridge (top), the harbour, and the road bridge over the river Waal

signed on August 11, 1678, and the others later, the final arrangement being made in 1679. France received Franche Comté and the control of Lorraine, and some of the fortresses of the Netherlands, while to her ally, Sweden, were returned territories in Germany taken from her during the war. This treaty marked the height of Louis XIV's power.

**Nijni Novgorod.** This was the name until 1932 of the Russian city of Gorky (*q.v.*).

**Nijni Tagil.** Industrial town in the Ural Mts., Sverdlovsk prov., R.S.F.S.R. Developed under the Soviet five-year plans, it has rly. workshops, steel, armament, and machine tool factories, and chemical plants. Besides consuming local coal, it imports supplies by rly. from Karaganda and the Kuzbass. It lies about 140 m. E. of Perm. Pop. 159,864.

**Nikē.** In Greek mythology, the goddess of Victory. By the Romans she was called Victoria. She was the daughter of the giant Pallas, and was elevated to Olympus by Zeus because, with her sisters, she was the first to assist him in his battle with the Titans. In art, Nikē is represented as a winged figure with a palm or a wreath, and in Roman times with a shield. She is often represented as guiding the horses of conquering heroes.

**Nikisch, ARTHUR (1855-1922).** Hungarian musician. Born at Szent-Miklos, Oct. 12, 1855, he studied music as a child in Vienna, where he became a violinist in the imperial orchestra until appointed conductor at the Leipzig theatre. He conducted the



Arthur Nikisch,  
Hungarian musician

symphony orchestra at Boston, 1889-93, orchestras at Budapest, Hamburg, and Berlin, and the Gewandhaus concerts at Leipzig. He died Jan. 23, 1922.

**Nikko.** Religious centre of Japan, in Honshu. It is almost due N. and 91 m. by rly. from Tokyo, the terminus of a branch line near the Daiyagawa, an affluent of the Kinugawa. N.E. to S.W. lies the Nikko range with peaks between 5,000 and 8,000 ft. alt. The district is chiefly celebrated for its lovely scenery, the tombs of Shogun emperors, and numerous temples

**Nikolayev.** Fortress and seaport of Ukraine S.S.R., capital of a region of the same name. It lies at the mouth of the S. Bug, 35 m. N.W. of Kherson. Formerly the headquarters of the Black Sea fleet, it has shipbuilding yards, factories producing agricultural machines and textiles, and fish canneries. Pop. (est.) 200,000

Nikolayev region is agricultural, and produces cotton, wheat, sunflower seed, etc.; dairy farming is important, and there are flour mills and sugar refineries. Area 7,500 sq. m. Pop. (est.) 800,000.



Nikē. The Winged Victory (Nikē Apteros), found at Samothrace, now in the Louvre, Paris

**Nikolayevsk.** Town of the Soviet Far East, capital of Lower Amur region. It lies near the mouth of the Amur. Formerly a naval base, it is a fishing and shipbuilding centre. Petroleum from Sakhalin is refined, and gold is mined in the vicinity. It has an aerodrome.

**Nikopol.** Town of Ukraine S.S.R. in Dniepropetrovsk region. It lies on the Dnieper, 110 m. N.E. of Kherson, in a rich manganese mining area. Pop. (est.) 60,000.

**Nikopolis** (Gr., city of victory). Name of several ancient cities, of which the most important were: (1) In Epirus, situated on a strip of land opposite Actium, in the Ambracian gulf. It was founded by Augustus to celebrate his victory over Antony, Sept. 2, 31 B.C., which made him the master of the Roman world. Games were held here every four years in honour of Apollo, to whom a magnificent temple was erected. (2) In Lower Egypt, on the canal leading from Canopus to Alexandria. Also

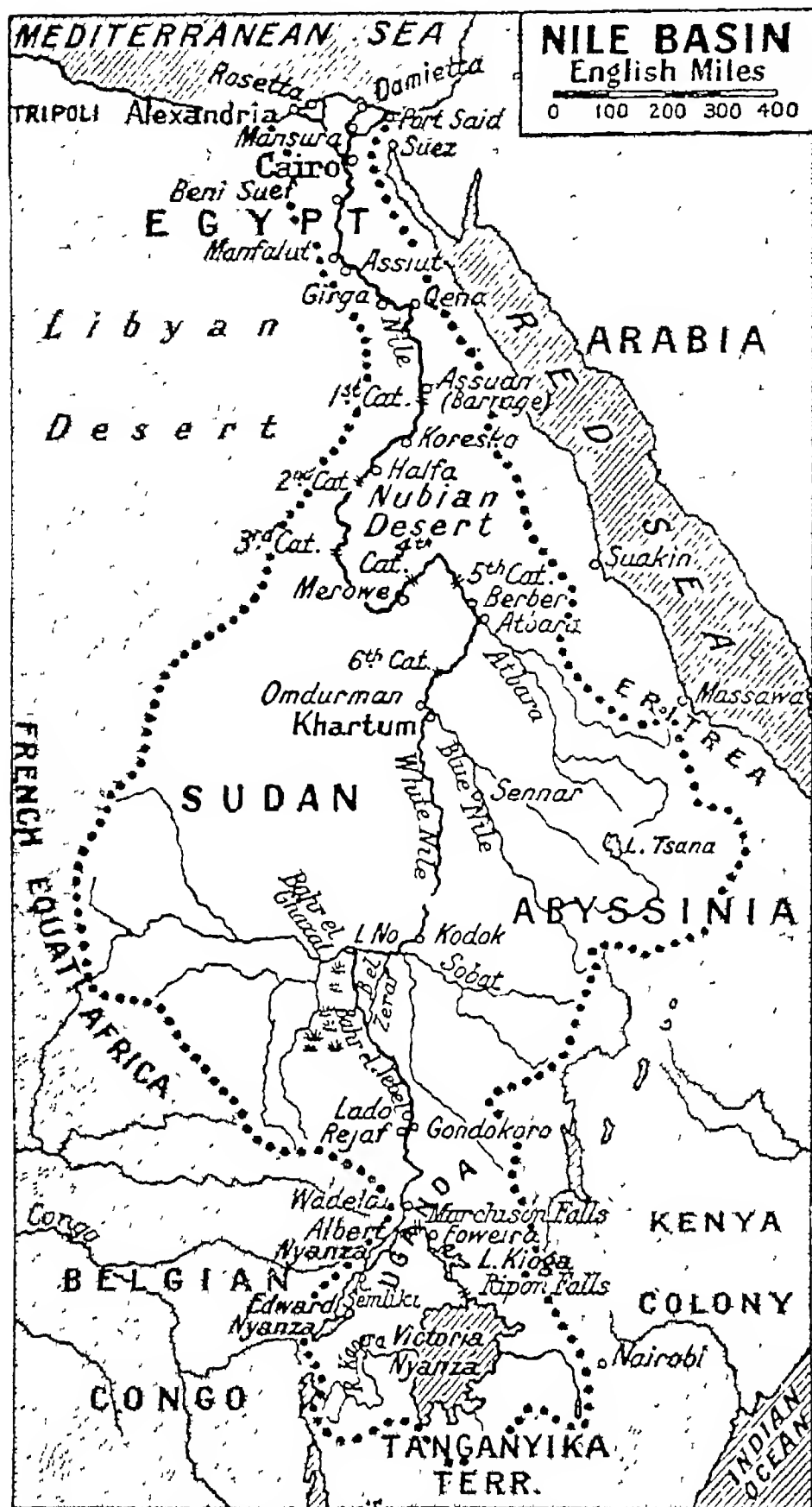
founded by Augustus, it commemorated the final defeat of Antony and Cleopatra. (3) In lesser Armenia, on the Lycus, built by Pompey in honour of his victory over Mithradates, 65 B.C.

**Nikopolis** OR NIKOPOLI. River port of Bulgaria. It is situated on the S. side of the Danube, about 25 m. N.E. of Plevna, with which it is connected by rly., and is linked by ferry with a rly. on the N. side of the river which connects with the Rumanian rly. system. In a fertile country, famous for its wine, Nikopolis has a citadel, an ancient castle, and a Byzantine church. Here the Turks defeated Sigismund of Hungary in 1396, in a battle at which the future Henry IV of England is said to have been present, and the Russians defeated the Turks in 1829. The town was damaged in the 1877 Russo-Turkish War. Pop. 4,963.

**Nile.** River of Africa. Though it was venerated by the Egyptians as the cause of their prosperity, its sources remained unknown until the discoveries of Speke in 1858 and Baker in 1864 revealed its great reservoir-lakes Victoria and Albert. The ancients had little knowledge of the river above Meroë (*q.v.*), and no knowledge of the causes of the annual inundations of the Lower Nile. Herodotus and other writers discuss this problem, without arriving at its solution. Ptolemy later speaks of two streams issuing from two lakes and afterwards uniting into one river, which was joined by the Astapus to form the main course of the Nile. This conception is illustrated in the maps of the 15th and 16th centuries, and until Bruce discovered the source of the Blue Nile, in 1770, little more than this was known of its course.

The Nile leaves the Victoria Nyanza at its north end, and pouring over Owen Falls (*q.v.*) proceeds through Lake Kioga (Chigoga), thence generally N.W. until it reaches the N. extremity of the Albert Nyanza. This section of the river is known as the Victoria or Somerset Nile, and below Foweira is impeded by a series of rapids culminating in the Murchison Falls, where the river drops 401 ft. in three cascades to the level of the Albert Nyanza. That lake is fed by the river Semliki, which drains the Edward Nyanza and forms, with the Kagera and other rivers flowing into the Victoria Nyanza from the S., the extreme head-waters of the Nile. From the N. extremity of the Albert Nyanza the river, here the Bahr-el-Jebel and later the





Nile. Map of the basin of the river from the Victoria Nyanza to the Mediterranean

White Nile, flows generally N. to the Mediterranean. At Rejaf, 15 m. S. of Gondokoro, it enters the region of the plains and continues thence to Khartum, some 1,096 m. to the N. Between these two points the Nile is navigable.

About 480 m. N. of Rejaf the Bahr-el-Ghazal enters the Nile from the W., and 50 m. farther is the junction with the Bahr-el-Zeraf. Some 530 m. S. of Khartum and 31 m. from the Bahr-el-Zeraf the Nile is joined by the Sobat, flowing from the highlands of Abyssinia, and at Khartum the waters of the Blue Nile mingle with the main river. From that point there are no considerable tributaries with the exception of the Atbara, which flows into the main river 24 m. S. of Berber. In its course through the Nubian Desert the Nile makes two great bends, and from Khartum as far as Assuan it is dangerous for navigation. Between these two points occur six cataracts.

whole country would be a desert. This Nile flood is an annual phenomenon comparable in regularity with the monsoon. The headwaters of the river receive water from the constant rains of the equatorial areas round the great lakes; this supply passes N. and is subject to great evaporation, and, being regulated by seepage, or percolation, into the swamps near Lake No, arrives in practically a constant volume by the White Nile at Khartum. The Assuan dam holds back the Blue Nile and Atbara floods.

The three main requisites for production of a crop are suitable soil, an adequate water supply, and good drainage. The silt in the Nile valley may be said to be everywhere suitable, but water has always had to be artificially provided. Three methods were adopted in ancient days to overcome the vagaries in the height of the Nile, in addition to the basin system. The shadoof was invented

The valley cut by the river as far as Khartum about 1,500 m. from the sea, is very narrow, and in Egypt fairly deep, the escarpment on either side leading to an irregular plateau, 200-300 ft. above the present bed of the river. The delta is considered to lie in an ancient bay of the Mediterranean, now filled in by silt brought down by the river which at one time might have fallen into the sea at Cairo: the river surface then would be 60 to 70 ft. lower than it is today. Silt and sand at Cairo is probably some hundreds of feet deep.

The importance of the Nile to Egypt and the Sudan cannot be overestimated. Without the annual inundations which fertilise the soil and provide the needful water for irrigation, the

to enable water to be lifted by direct manual labour on to fields which would otherwise remain unwatered; the water wheel (sakia) was brought into use with the assistance of oxen; and primitive canals were dug to take advantage of higher water levels upstream. The necessity for drainage depends to a large extent on the crops produced and the intensity of cultivation.

Among engineering works constructed on the Nile, for improving the water supply and for irrigation, may be mentioned:

The Delta barrage (1861), comprising the Damietta and Rosetta branches, cost nearly £2,000,000, and is 1,000 metres in length. In 1902 the Zifta barrage, 400 metres, and the Assiut barrage, 833 metres, were completed, and the Assuan Dam, which cost about £2,500,000, was brought into operation. This last is nearly 2,000 metres long, and in 1907-12 and again later it was thickened, heightened, and strengthened. The Esna barrage, in Qena prov., regulates the water drawn off by the Asfum and Kalabia irrigation canals; it was constructed in 1908 and is being remodelled so as to provide perennial irrigation for 600,000 acres, which will allow of growing two crops a year. The Nag Hammadi barrage, costing nearly £2,000,000, was completed in 1930, is 876 metres long, and waters Girga prov. The Sennar dam, on the Blue Nile, 160 m. S.S.E. of Khartum, built 1921-25 for c. £5,600,000, renders fertile 850,000 acres. The Owen Falls dam (q.v.), started in 1949, was the first part of a project to regulate the Blue Nile and provide irrigation and electric power over large areas of central and N. Africa.

Important places on the Nile include Damietta, Cairo, Beni-suef, Assiut, Girga, Qena, Assuan, Korosko, Wadi Halfa, Berber, Atbara, Khartum, Omdurman, Kodok, and Gondokoro. The Nile, measured from the Victoria Nyanza to the sea, has a length of 3,526 miles.

**Bibliography.** The Nile Quest, Sir H. Johnston, 1903; Report upon the Basin of the Upper Nile, W. E. Garstin, 1904; Physiography of the Nile and Its Basin, H. G. Lyons, 1906; Discovery of the Source of the Nile, J. H. Speke, new ed. 1906; Egyptian Irrigation, Sir W. Willcocks and J. I. Craig, 3rd ed. 1913; The Nile Basin, H. E. Hurst and R. P. Black, 1945.

**Nile, BATTLE OF THE.** British naval victory, Aug. 1, 1798. The treaty of Campo Formio, Oct. 17,

1797, had practically made the Mediterranean a French lake. Mutiny had weakened the British fleet, and when Spain entered the war, the fleet had been compelled to abandon the Mediterranean. Bonaparte was instructed to seize Malta, drive the English from all their possessions, occupy Egypt, make a channel through the isthmus of Suez, and secure the Red Sea for France. Lord St. Vincent, who was blockading Cadiz, heard of the armament preparing at Toulon, and sent Nelson to look into the ports and observe the proceedings of the French. No proper force could be given to him, and his flagship, the *Vanguard*, was dismasted in a gale which left the French untouched. They put to sea on May 19, took possession of Malta, and were joined by convoys from Genoa, Ajaccio, and Civit  Vecchia.

In England it was thought that Bonaparte might aim at Naples or Sicily, or land an army to invade Portugal, or strike at Ireland. Nelson, reinforced, sought the enemy for many weeks, deploring the want of frigates to scout for him. On Aug. 1 he discovered the French transports at Alexandria, and their fleet of 13 sail of the line and 4 frigates, commanded by Brueys, anchored in a broken line, in Abukir Bay. Nominally the French fleet was far superior to his own.

Nelson's plan was to attack the French van and centre, and to anchor, if it might be, inside and outside the French line. If Brueys was not surprised by Nelson's attack, he was unprepared for the English ships going between him and the shore. The *Goliath*, *Zealous*, *Orion*, *Theseus*, and *Audacious* all passed inside the enemy's line at about 7 p.m., anchoring, and raking with terrific fire the headmost ships of the squadron—*Guerrier*, *Conqu rant*, *S rieuse*, *Peuple Souverain*, and *Spartiate*. The *Vanguard*, flying Nelson's flag, anchored by the stern outside and abreast of the *Spartiate*, and the *Minotaur* and *Defence* followed. The *Bellerophon*, *Majestic*, *Swiftsure*, and *Alexander* successively attacked the three-decker *Orient*, which flew the French admiral's flag, the first two suffering serious loss. A tremendously destructive fire was poured into the enemy. The headmost ships of the French line were completely overcome, and at about 10 o'clock the *Orient* caught fire, and was soon ablaze. The *Guillaume Tell* and *G n reux* were fugitives. See Egypt; Nelson; Sea Power.

**Nilgai** (*Boselaphus tragocamelus*). Species of antelope, found in India. It stands between 4 ft. and 5 ft. high at the withers. The adult male is brownish grey, with white markings on the face and throat, white rings at the fetlocks, whitish underparts, and short, smooth, nearly straight horns. The females are smaller, brown, and hornless. The animal is remarkable for the comparative shortness of the hind limbs, and the rapid slope of the back line. It is found in the plains and hills of India.

**Nilgiri** or NEILGHERY HILLS. Hill range of the Deccan, India. The Blue Mts., so called from the overhanging haze which characterises the hills when seen from the plains, form a knot of high ground, alt. 6,000 ft., at the junction of the E. and W. Ghats. To the S. the Palghat Gap separates the sharp slopes from the S. continuation on the W. Ghats; to the N. the Wainad tableland stretches to Mysore. The high ground consists almost entirely of open, grassy "downs," separated by forested glades, from which rise the peaks. Dodabetta, 8,760 ft., is the culminating point, while close to it Snowdon, Elk Hill, and Club Hill, all higher than 8,000 ft., are on the edge of an amphitheatre within which lies Ootacamund. This elevation modifies the climate, so that the Nilgiris are a hot weather resort for Europeans. Cinchona, jalap, ipecacuanha, and coffee are grown upon numerous plantations. Of the natives the Todas are pastoralists, the Badagas tillers of the soil; primitive Kurumbas and Irulas live in jungles.

**Nilgiris**. District of Madras state, India, in the Nilgiri Hills. Only about one-tenth of the total area is tilled, chiefly for food grains and coconuts. Ootacamund is the h.q. Area 989 sq. m. Pop. (1951) 311,729.

**Nilometer**. Gauge for measuring the annual floods of the Nile. Such devices were placed all along the river in Pharaonic times, on quay walls or in wells attached to temples; the oldest still in use in the 1950s was built in 716 A.D. on the island of Rhoda, near Cairo. It consisted of a square well connected with the Nile by a canal and containing a granite pillar marked with 24 lines at intervals of one cubit.

**Nilotic**. Term denoting the E. division of the true negro race. Wholly within British control, they occupy the valleys and marshlands of the upper Nile basin, to which they became confined by the pressure of pastoral tribes of Hamitic stock. Tall, slim, narrow-headed, and the darkest of all negroes, they are distinguishable from the W. or Nigritic division by their more retreating foreheads and



Nilgai. Antelope which is found in the plains and low hills of India  
W. S. Berridge, F.Z.S.

longer legs. Mostly unclad, they have personal ornaments including metal and ivory armlets, ostrich shell beads, and lip plugs; most tribes also extract the lower incisors. They practise cattle-breeding and agriculture, and subsist largely on milk and fish. Their round huts, with conical or domed roofs, are sometimes supplemented by bachelor-huts on tall posts and by pile granaries. They use clubs, socketed spears, bows, and sometimes wrist-knives, with wood or hide shields.

The principal tribes are the Shilluk, Dinka, Nuer, Acholi, Kavirondo, Jaluo, Bari, Latuka, Lango, Nandi, Suk, and Turkana. Their southernmost representatives, the Masai, exhibit the fullest infusion of Hamitic blood and culture. See Negro.

**Nim** (*Azadirachta indica*). Tree of the family Meliaceae, also called neem, margosa, or bead-tree. A native of India, it has leaves divided into numerous oval leaflets with toothed edges, and branching panicles of small bluish flowers, succeeded by olive-like purple fruits, each containing a single seed. The latter has a natural perforation, which causes it to be used in the construction of rosaries, and on this account Roman Catholics call the tree Arbor Sancta. The timber is useful for building, and the bark affords a tonic, whilst the roots are used as a vermifuge and the fresh leaves as a natural poultice for glandular swellings and in rheumatism. Dried leaves inserted between the leaves of books, etc., repel the attacks of destroying insects. The same property resides in the seeds, which are powdered to form an insect-poison, and when dissolved in water may be utilised as a hair-wash. The fruit yields the medicinal margosa oil, which serves also as a dye for cotton goods.



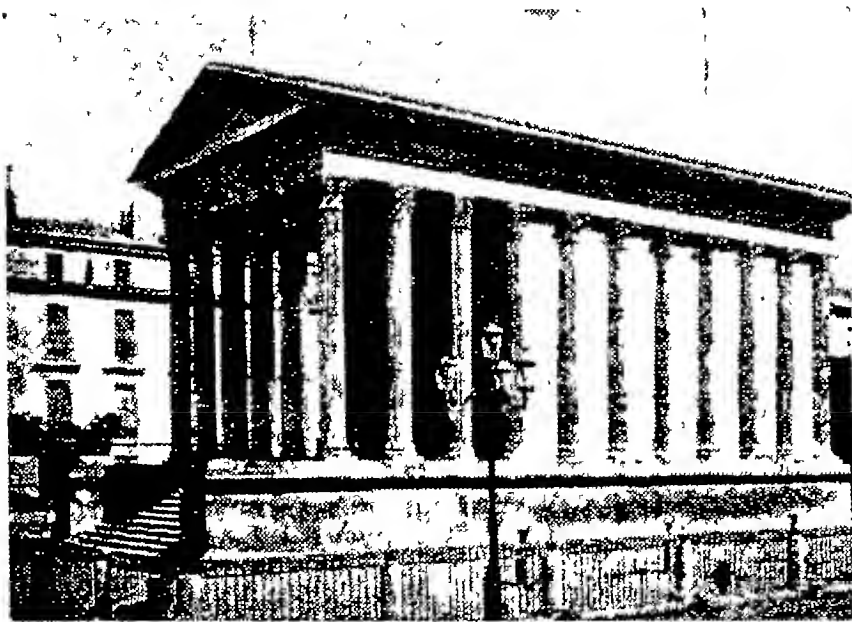
**Nimbus** (Lat., a cloud, divine effulgence). In art, the halo encircling the head of a holy personage. (See Aureole; Halo.)

In meteorology, nimbus means a rain cloud, really dense masses of dark formless clouds with ragged edges, through which is visible a higher sheet of altostratus. Low fragments of cloud floating below the nimbus are called fractonimbus or scud. Steady rain or snow usually falls from the edges of the nimbus. See Cloud colour plate.

**Nîmes.** City of France, capital of the dept. of Gard. It is situated in a fertile plain W. of the Rhône and E. of the Cévennes mts., 25 miles N. of the Mediterranean and 174 miles S. of Lyons. It has Roman remains; other buildings are the cathedral of S. Castor, the churches of S. Baudile and S. Paul, the citadel, dating from the 17th century, and several museums. A former Jesuit college houses one collection and also the public library. The museum of painting and sculpture includes a collection of pictures



Nîmes arms



purchased by the city in 1875. There is a palais de justice. Industries include the manufacture of silk and other textiles. The old fortifications have been replaced by boulevards, while another public amenity is the fountain gardens. Pop. (1954) 89,130.

One of the most ancient and interesting of French cities, Nîmes is famous for its Roman remains.

Before the coming of the Romans, there was on the site the tribal capital of Nemausus, with an important shrine at the spring sacred to the god Nemausus. The Roman city was founded by Augustus, and walls, temples, and other usual features of a Roman city were erected. The amphitheatre is in an excellent state of preservation. It is said to have held over 20,000 persons. The Maison Carrée (*q.v.*), believed to have been the *capitolium*, is a perfect Roman temple. The so-called temple of Diana, two Roman gates, and parts of the town walls still remain. The Tour Magne, a Roman watchtower, stands on Mont Cavalier, 375 ft. high. The Pont du Gard (*see illus. under Aqueduct*), 12 m. N.E. of Nîmes, was constructed by the Romans to bring water to that city.

After the fall of the Roman empire the city suffered decline. In 1185 it became part of the county of Toulouse and its fortifications were restored. For a short time in the 16th century there was a university here. In the time of the Reformation it was a Protestant stronghold and the scene of considerable bloodshed. Four ecclesiastical councils were held at Nîmes, the most important being the one under the presidency of Pope Urban II in 1096. Alphonse Daudet was one of several eminent men born in the city. In the unoccupied zone of France during the Second Great War until Nov., 1942, it was liberated by French troops under Gen. de Lattre de Tassigny, Aug. 28, 1944.

**Nimitz, CHESTER WILLIAM** (b. 1885). American sailor. Born

at Fredericksburg, Texas. Feb. 24, 1885, he graduated from the U.S. naval academy in 1905. During the First Great War he was chief of staff to the American submarine force in the Atlantic.



Chester Nimitz, American admiral

Promoted rear-admiral, 1938, he took over command of the Pacific fleet after the disaster of Pearl Harbor in 1941, with the rank of admiral; his command included army and marine units as well as naval ones.

With the aim of capturing Japanese-occupied islands in the Pacific "up the ladder" towards Japan, he directed successful operations against the garrisons in the Solomon, Gilbert, Marshall, and Marianne Islands, and Iwojima. Promoted fleet admiral in 1944, during 1944-45 he successfully attacked Leyte, Luzon, and Okinawa. He signed, as U.S. representative, the instrument of Japanese surrender in Tokyo Bay on Sept. 2, 1945, and in 1947 retired from the U.S. navy. In 1949 he was appointed to act as administrator of the plebiscite which the United Nations proposed to hold in Kashmir (*q.v.*).

**Nimptsch** (Pol. Niemcza). A town of Silesia, in the part, formerly German, placed under Polish administration by the Potsdam agreement of 1945. It lies 17 m. S.E. of Schweidnitz, and has a castle and R.C. and Protestant churches. There are porcelain factories. In the vicinity is the Spitzberg, with fine panoramic views of the countryside.

**Nimrod.** A notable hunter and warrior (Gen. 10), to whom Biblical legend attributed the building of Nineveh and Calah. He is probably to be associated with the Assyrian Ninurta, god of warfare and hunting, whose worship at Calah gave rise to the modern name of the site, Nimrud.

Nimrod was the pen-name of C. J. Apperley (*q.v.*).

**Nine Pins.** Wooden pieces with which the game of skittles or nine pins is played. The



Nîmes, France. View from the air of the Roman amphitheatre, built in the 1st and 2nd centuries A.D. It had 34 tiers of seats and held 20,000 spectators. Above, left, the Maison Carrée (so called), built by Agrippa c. 16 B.C.

object of the game is to knock the pins over with a wooden ball at the fewest possible attempts. In the U.S.A. the popular game there called bowling developed from nine pins.

**Nine Power Agreement.** Signed in 1923 between Great Britain, France, Italy, Belgium, the Netherlands, Portugal, the U.S.A., Japan, and China. It guaranteed the sovereignty, independence, and administrative and territorial integrity of China, pledging the signatories to assist that country to maintain a stable govt., and ensuring non-discrimination in diplomatic and commercial relations. The treaty was violated by Japan's military action in Manchuria in 1931. After her attack on China in 1937, the treaty was invoked, but a conference at Brussels failed to yield any result.

**Nineteenth Century, THE.** Original name of the British monthly review, renamed the *Nineteenth Century and After* in 1901, the *Twentieth Century* in 1951. It was established in March, 1877, by James T. Knowles, founder of the Metaphysical Society. Its first issue contained a prefatory sonnet by Tennyson and contributions by Matthew Arnold, Gladstone, Huxley, and Manning. The review aims at registering its "disbelief in the contemporary fallacy of collective identity," and at an unbiased presentation of home and foreign affairs, arts, and letters. It is edited at 1, Orsett Terrace, London, W.2.

**'Ninety-Eight.** Term used for the Irish rebellion in 1798. England was at war with France, and there was general unrest. A small rebellion in Ulster was crushed and the whole country placed under martial law. Under this there was a certain amount of terrorism, and in May rebellion broke out in Kildare. Other Leinster counties followed, but the risings were quickly put down. In Wexford the movement was more serious, and 15,000 rebels under Father Murphy seized the county town there and set up a camp on Vinegar Hill.

A large body attacked and almost destroyed New Ross, but the insurgents were defeated when they marched to Arklow. On June 21 General Gerard Lake attacked their camp on Vinegar Hill, and his complete victory there virtually ended the rising. The movement is commemorated in J. K. Ingram's verses, *Who fears to speak of '98?* The Jacobite risings of 1715 and 1745 are simi-

larly referred to as the Fifteen and the Forty-five. See Vinegar Hill.

**Nineveh.** Assyrian city which lay on the left bank of the r. Tigris at its junction with the Khosr (the ancient Tebiltu) which once bisected the city. Modern Mosul, in N. Iraq, lies on the opposite bank of the Tigris. The ancient name was Ninua (Gk. Ninos), which means the city of the fish-goddess Nina, later identified with Ishtar. A village settlement in prehistoric and protohistoric times, it quickly grew in importance; Manishtusu, son of Sargon of Akkad, built a temple there, and Hammurabi of Babylon, who also conquered Assyria, repaired and enlarged it. The Assyrians built palaces and other temples, and the city grew until it rivalled and even surpassed in splendour both Asshur and Calah. Shalmaneser V made it, c. 725 B.C., the capital of Assyria.

For a time outshone when Sargon II left it to create a new residence at Khorsabad, it regained prestige under his successor Sennacherib, whose splendid palace was constructed on an artificial platform of mudbrick and bitumen, after the waters of the river had been diverted. The employment of unlimited supplies of slave labour provided by prisoners of war enabled him to erect other public buildings and temples, to enlarge the town, strengthen the ramparts, and, by bringing irrigation water from Bavian, 50 m. away, along a stone-paved aqueduct, to create a canal system watering new parks and orchards in which he acclimatised exotic animals and plants, including the Arabian cotton. Reliefs illustrating the building of the palace are in the British Museum.

Esarhaddon, his successor, built a palace farther south and widened the streets; from Ashurbanipal's palace farther north came the wonderful Lion Hunt series of sculptures in the British Museum, as well as his vast library of cuneiform tablets. In the last invasion of Assyria by her foes, Scythians, Medes, and Babylonians, Nineveh withstood assault for four years, falling in the end in 612 B.C. The king and many officers perished, and the great city was put to fire and sword. The prophecies of Nahum and Zephaniah had been fulfilled: "The spoils of the city, more than could be numbered," said the Babylonian chronicler, "they took for themselves, and they made the city a mound and a ruin." When Xenophon passed by in 410 B.C., the site was deserted.

Today the ruins of Nineveh comprise some 1,800 acres. Modern calculations have confirmed the possibility of the estimate of Jonah 4 that the city contained "more than 120,000 people." The statement (Jonah 3) that it took three days to cross must be an exaggeration; but Diodorus estimated the width of the city and its suburbs as 17 miles. The walls,  $7\frac{1}{2}$  m. long, contained 25 gates, and towers at intervals. There are two chief mounds or *tells*, which mark the citadel or palace area: Kuyunjik in the north, and Nebi Yunus to the south, a high mound on which stands a village, a mosque, and the supposed tomb of Jonah. Kuyunjik was explored by Claudius Rich and excavated by Botta, Layard, Rassam, and others during 1842-50. George Smith found more tablets here in the 1870s, and Rassam returned 1878-82. A British Museum expedition during 1927-32 reached earlier levels and explored down to virgin soil. Nebi Yunus, which cannot be touched by excavation, is known to be the site of Esarhaddon's palace. Consult *Discoveries in the Ruins of Nineveh and Babylon*, A. Layard, 1853; *A Century of Exploration at Nineveh*, R. C. Thompson, 1929; *The Stones of Assyria*, C. J. Gadd, 1936; *Nineveh and the Old Testament*, A. Parrot, 1955.

**Ningpo.** City and former treaty port of China, in Chekiang prov. It is situated at the junction of the two branches of the river Yung, 12 m. from the mouth. Ningpo is 1,200 years old; the site of old Ningpo, which is said to have existed in 2205 B.C., is at some distance from the present city. The circuit of the walls, built about 870, is 5 m. Portuguese traders visited Ningpo in 1522, but were expelled in 1542. The city was occupied by the British, 1841, and declared a treaty port by the treaty of Nanking in 1842. A British consulate was established here in Dec., 1843, and a customs station in 1861. Pop. (est.) 250,000.

**Ningsia** OR NINGHSIA. City of Kansu province, China. It is surrounded by a network of canals used to provide artificial irrigation in the farms of the locality.

Ningsia was formerly the capital of a separate province of the same name, area 106,140 sq. m., which in 1953 was absorbed in Kansu. Part of the former Ningsia prov. is inhabited by nomadic Mongolian-speaking Khalkas and Buriats. Ala-Shaw formed part of Ningsia, and the Ala-Shan range bordered it on the S.E.



**Ninian** OR NINIAS (d. c. 432). British bishop and saint. A native of N. Wales, he was educated in Rome, and being consecrated bishop, built what is said to have been the first stone church in Britain at Whithorn, in Galloway. A missionary among the southern Picts, he is credited with maintaining the Catholic faith against the teaching of Pelagius. His festival is Sept. 16.

**Ninlil.** See Enlil.

**Ninurta** OR ENURTA. Babylonian and Assyrian deity. Appropriating the attributes of Ningirsu of Lagash and other vegetation gods, he was, as son of Enlil (Bel), the embodiment of storm and the god of battle and of the chase. Perhaps the prototype of Nimrod (*q.v.*), he was worshipped especially at Calah (Kalkhu), mod. Nimrud, the garrison city of the Assyrian kings, who attributed to him their success in war and hunting. He is depicted brandishing weapons of war or the chase; he sometimes wears a double lion's head. His consort Baba (later Gula) was the goddess of healing.

**Niobē.** In Greek mythology, the wife of Amphion, king of Thebes, by whom she had twelve children. She was so proud of this that she mocked the goddess Leto or Latona, who had given birth to only two children, whereupon the offended goddess incited her son Apollo and her daughter Artemis to slay all the children of Niobē with their arrows. Niobē was changed into a stone, in which form she incessantly wept for her lost children, streams of water trickling down the stone. The legend of Niobē has frequently been treated in art. The group of Niobē at Florence is a copy of one which is attributed to Scopas or Praxiteles. See Magnesia.

**Niobium** OR COLUMBIUM. One of the less known metallic elements, the properties of which indicate that it may in future have applications in metallurgy. Its chemical symbol is Nb or Cb, and it is one of the transitional elements in the second long period of the periodic table of the elements. Its atomic number is 41; atomic weight,

92.91; density 8.5 g. per ml.; melting point, 1,950° C.; crystal form, body-centred cubic, with lattice constant  $a=3.2941$  and an interatomic distance of 2.8528 Å.

It occurs in nature chiefly as columbite,  $(\text{FeMn})\text{Nb}_2\text{O}_6$ , and it is often associated with tantalite,  $(\text{FeMn})\text{Ta}_2\text{O}_6$ . It is obtained chiefly from deposits in N. Nigeria and from S. Dakota. The metal was first separated in 1846 and it is now extracted with tantalum by fusion with caustic potash.

Metallic niobium is light steel-grey in colour and similar to wrought iron in mechanical properties, being easily fabricated and welded. Being resistant to corrosion and attack by acids, it has been used for chemical apparatus. The metal readily absorbs gases and has been used as a "getter" in thermionic valves. It is available as wire, sheet, and rod, and the ferro-alloy is added to steels, in which it forms stable carbides. See Getter; Metallurgy; Nitriding; Tantalum.

**Niobrara.** River of the U.S.A. Rising in the S.E. of Wyoming, it flows E. through Nebraska, and joins the Missouri on the right bank at Niobrara. It is a rapid, unnavigable river 450 m. long.

**Niort.** City of France. It stands on the left bank of the Sèvre Niortaise, 38 m. N.E. of La Rochelle, in the dept. of Deux Sèvres, of which it is the capital. Its buildings include the beautiful church of Notre Dame, built in the 16th century. The churches of S. Andrew and S. Hilary are modern. The keep of the castle still stands, and there is a fine modern town hall, and a palais de justice. The old town hall houses a museum, and there is a botanical garden.

The industries include tanning and the making of gloves and boots, while there are many market gardens in the vicinity. Niort grew up around a castle built by the count of Anjou, in the 12th century, and was a flourishing port. During the wars of religion it was a Huguenot centre, and was besieged; in 1588 the cathedral of S. Andrew was destroyed. Pop (1954) 33,167.



Niobē, with one of her daughters: copy of sculpture attributed to Scopas or Praxiteles  
Uffizi Gallery, Florence

**Nipigon.** Lake and river of Ontario, Canada. About 30 m. N. of Thunder Bay on Lake Superior, it is 70 m. long and 40 m. broad; area 1,730 sq. m. In it are about 1,000 islands, and the Ogoki flows into it from the N. The river Nipigon passes from the lake into L. Superior, and is famed for its trout.

**Nipissing.** Lake of Ontario, Canada. It lies N. of Lake Huron, is 50 m. long and about 20 m. broad; area 330 sq. m. The Sturgeon flows into it and the French River, 55 m. long, carries its waters to Lake Huron. It contains many islands. The part of Ontario around it is known as the Nipissing dist.

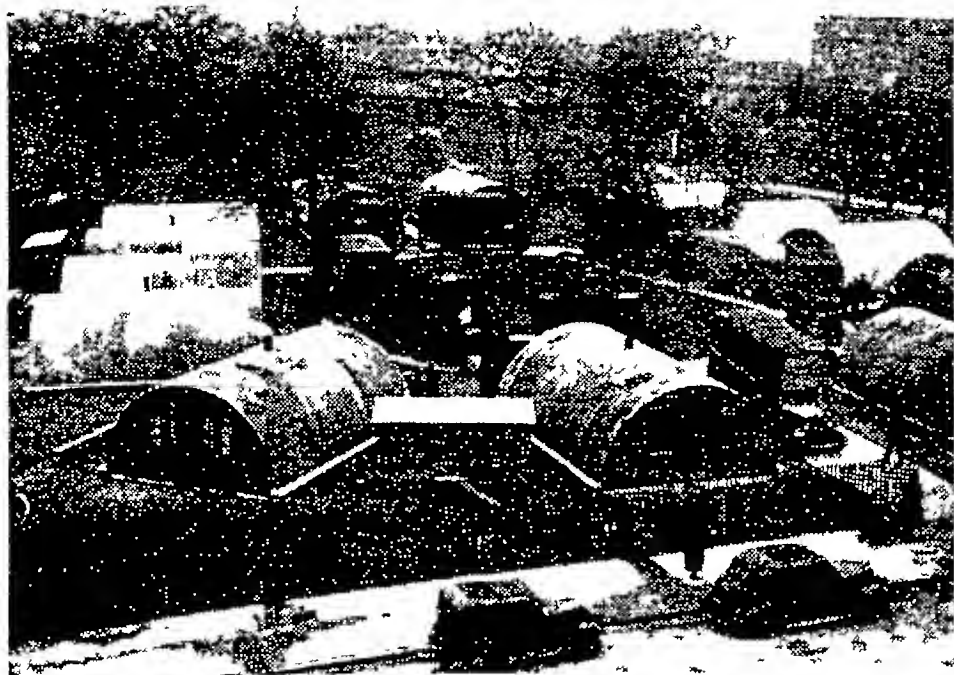
**Nippon.** Variant spelling for Nihon, or Dai Nihon, the Japanese name for Japan (*q.v.*).

**Nippur.** Sumerian city, on the site of mod. Nuffar on the Shatt-en-Nil, 20 m. E.N.E. of Diwaniya in Iraq. It had a shrine to the god Enlil (*q.v.*), foremost of the gods which attracted pilgrims throughout Babylonia and was a centre of priestly learning. An ancient plan of the city shows an inner and outer enceinte, intersected by canals. It lay on both banks of the stream, an ancient bed of the Euphrates; its temples and zigurat were many times restored and rebuilt, and the temple of Enlil ultimately became a Seleucid fortress. Many tablets found in and near Nippur include the "Drehem find" of tax inventories and the archives of Murashu Sons, a commercial firm of the Persian period. See Babylonia.

**Nirvāna** (Skt., extinction). Buddhist term for the spiritual state attained by one who has conquered self and, by the exercise of self-sacrifice, sympathy, loving thought, and deeds of kindness, extinguished desire. The attainment of Nirvāna implies the extinction of personality and the union of the individual with the infinite. See Karma.

**Nisan.** First month in the Jewish eccles. year and seventh in the civil or secular. It corresponds approximately to the Christian month of April. The name Nisan was adopted from the Babylonian calendar after the Captivity (Neh. 2, v. 1) and replaced the Jewish name of Abib (*q.v.*).

**Nish** (Yug. Nis). Town of Yugoslavia. The ancient Naissus, it is the chief city in Upper Moesia or Morava. On the Nishava, it is the junction of the rly. from Belgrade, 150 m. N.W., to Sofia with the line to Salonica, and has extensive rly. works. It was the birthplace of Constantine the



**Nissen Hut.** Invented for the housing of armed forces, these huts at Brixton, London, were erected during the Second Great War to accommodate bombed out families

**Great.** On the outbreak of the First Great War, the Serbians made it their temporary capital. It was taken by the Bulgarians, Nov. 5, 1915, but recaptured by the Serbs, Oct. 12, 1918. In the Second Great War it was occupied by the Germans, April 9, 1941, liberated Oct. 16, 1944, by Bulgarians with Russian troops and Yugoslav patrols. Pop. (1953) 60,677.

**Nishapur.** Town of Persia, famous as the birthplace and burial place of Omar Khayyám (*q.v.*). It is in prov. 9 (Khorassan), about 50 m. W. of Meshed, and trades in cotton and woollen goods and fruits, chiefly almonds. Some 30 miles to the north of it there are turquoise mines.

**Nisibis.** Ancient city of Mesopotamia, the Roman Antiochia Mygdoniae, and the modern Nisibin, Turkey. A frontier city in Assyrian times, guarding the piedmont route from Nineveh to the west, it changed hands in many wars between Romans and Parthians and Persians. The Persians secured it after the disastrous expedition of Julian the Apostate, 363.

**Nisi Prius** (Lat., unless before). English legal term. By Magna Carta, it was ordered that certain writs of assize should be tried before justices who should be sent into every county at least once a year. At a very early date it became customary to try other actions before the judges of assize. Jurors used to be summoned, by writ of venire, to the courts at Westminster on such and such a day, unless before that day the king's justices should come into their county. A trial of a civil cause before a judge of assize was therefore called a trial at *nisi prius*; and the term is still adhered to, and recognized by statute.

**Nissen Hut.** Building used by the British armed forces. It consists of two corrugated iron struc-

tures of semi-circular section erected one within the other on a metal frame, with a small air space in between. The floor above the brick foundation is of wood, as are the end walls, in which doors and windows are built. Dormer windows are sometimes built into the side walls. The length is from 16 ft.

upwards. The hut, self-supporting and weatherproof, was invented in 1915 by Col. Peter Nissen, R.E., to meet an urgent need for shelter. Among its advantages are the rapidity with which it can be erected or dismantled, and the ease with which it can be transported; six men can put up a Nissen hut in one day. The principle of construction was later applied to factory buildings.

**Nith.** River of Scotland. Rising in Ayrshire, it flows 55 m. S.E. through Dumfriesshire to the Solway Firth, 13 m. below Dumfries. Its valley is known as Nithsdale.

**Nithsdale,** WILLIAM MAXWELL, 5TH EARL OF (1676–1744). Scottish Jacobite leader. Son of Robert, 4th earl, in 1715 he joined Derwentwater in the rebellion, and with other Jacobite leaders was captured at Preston and sentenced to death. Nithsdale was saved by his wife, who, after pleading vainly with the king, paid a farewell visit to her husband in the Tower, disguised him as a woman in hood and cloak, and got him safely away. Nithsdale escaped to Calais. His wife was arrested, but later was permitted to join him. His estates were forfeited, but restored to his son on the earl's death, March 20, 1744. The title was forfeited.

**Niton.** Alternative name for the gaseous element, no. 86 in the periodic table sometimes called radon. See Radium; Radon.

**Nitrates.** Name given to the salts or compounds of nitric acid, *i.e.* those formed by the substitution of metals for the hydrogen of nitric acid (*q.v.*). Nitrates find useful applications, *e.g.* the potassium salt ( $\text{KNO}_3$ ) in the manufacture of gunpowder, glass, enamels, pyrotechnics, and fertilisers; ammonium nitrate ( $\text{NH}_4\text{NO}_3$ ) in freezing mixtures, explosives, and fertilisers; and calcium nitrate,  $\text{Ca}(\text{NO}_3)_2$ , as a fertiliser.

Potassium nitrate (nitre or saltpetre) has been used since ancient times. It is found in Bengal, Bombay, and in caves in Ceylon formerly tenanted by men, animals, and bats, and as an efflorescence on soils in hot countries such as Peru, Bolivia, S. Africa, and Egypt. Up to the beginning of the 19th century it was made in Europe from artificial saltpetre earth by stacking decomposing organic matter in mounds and moistening from time to time. The nitrification process was allowed to proceed for about a year before the mounds were extracted with water and the dissolved nitre obtained by evaporation. Saltpetre is extracted in India from natural saltpetre earth by lixiviating in wooden or earthenware vessels and concentrating in iron pots; the crude product contains 45–70 p.c. of potassium nitrate. Saltpetre, or conversion nitrate, is also made from sodium nitrate and potassium chloride by mixing a saturated solution of the former salt with a molecular proportion of potassium chloride and concentrating. Nearly pure potassium nitrate is deposited on cooling.

Another mineral of economic importance is nitratine (sodium nitrate), which before 1900 supplied the bulk of the world's nitrogen requirements. Since then the extraction of nitrogen from coal and the atmosphere, and the direct synthesis of ammonia from nitrogen and hydrogen have furnished 92 p.c. of the world's production. In the Chilean desert regions, nitratine deposits occur among other soluble alkali salts. Because of their solubility, such minerals can accumulate only in extremely arid regions and the association of the Chilean deposits with volcanic rocks suggests that the nitrates have been derived from the latter by some leaching process. Chilean saltpetre is mostly used as a fertiliser.

**Nitrator.** Chemical apparatus in which the operation of nitration is conducted. The essential features are a container usually constructed of iron or lead, but sometimes of earthenware, fitted with means for heating or cooling the contents, either by a jacket or internal coils for steam or water circulation; pipes for the admission of raw materials and acids; provision for the removal of fumes, and means of agitating the contents. For nitroglycerine a lead vessel is generally used, and because of the sensitive nature of the explosive compressed air is injected for agitation. A drowning



pit is also arranged below, into which the contents may be quickly dumped if any dangerous action commences. Nitro-aromatic compounds are dealt with in large iron nitrators fitted with mechanical agitators. These frequently have a capacity of 1,600 gallons, producing about 4 tons of explosive at each operation. *See Explosives.*

**Nitre-cake.** By-product in the manufacture of nitric acid from sodium nitrate and sulphuric acid. Chemically it is known as acid sodium sulphate or bisulphate of soda ( $\text{NaHSO}_4$ ). Nitre-cake is used as an acid flux in the decomposition of minerals and in dyeing.

**Nitric Acid** OR AQUA FORTIS ( $\text{HNO}_3$ ). One of the oldest known nitrogen compounds, containing that element with hydrogen and oxygen. It is still manufactured by decomposing Chile saltpetre (sodium nitrate) with sulphuric acid, a method closely resembling those employed in the 16th century for the production of aqua fortis for parting gold and silver. A modern process is the catalytic oxidation of ammonia by passing it mixed with air over heated platinum gauze. Another method is bringing about the direct union of oxygen and nitrogen by the electric arc (Birkeland-Eyde process). Nitrogen peroxide is the chief gas formed, and this, absorbed by water, yields nitric and nitrous acids, the latter being subsequently converted into nitric acid.

Nitric acid is largely used for the manufacture of explosives—nitroglycerine, gun-cotton, trinitrotoluene, etc.—and aniline dyes. It forms a series of salts known as nitrates, some of which are largely employed in industries. Silver nitrate is valuable in photography, lead nitrate, iron nitrate, and aluminium nitrate in dyeing and calico-printing, and barium and strontium nitrates in fireworks.

**POISONING BY NITRIC ACID.** Two drachms of concentrated nitric acid have proved fatal. As soon as the acid is taken, violent pain is felt in the mouth, gullet, and stomach, followed by severe vomiting. The lips and teeth are stained yellow, and the mucous membrane is excoriated. The tongue becomes swollen, symptoms of collapse supervene, the pulse becomes weak, the skin cold and clammy. Eventually death occurs from exhaustion, usually in from 18 to 24 hours. If death does not occur from shock, bronchitis, congestion of the lungs, and pneumonia may follow. Inhalation of the fumes alone may be fatal. Treatment

should be directed to neutralising the acid as quickly as possible. Calcined magnesia is the best antidote, but sodium bicarbonate, chalk, whitening, ceiling plaster, etc., may be administered.

**Nitriding.** A process of case-hardening (*q.v.*), used to produce a thin but hard case on finished steel articles. The steel part is finished by machining and heat-treated to give the properties desired for the core. It is heated for 40–90 hours at  $500^\circ \text{C}$ . in a box through which ammonia is circulated, and then cooled slowly in the same box. Part of the ammonia breaks up into nitrogen and hydrogen, and some of the nitrogen is absorbed in the surface of the steel, forming iron nitride,  $\text{Fe}_4\text{N}$ . Plain carbon steels can be treated in this way, but better results are obtained with alloy steels containing small amounts of chromium, molybdenum, or aluminium. The process gives a case extremely hard but needing no subsequent heat-treatment. It is used for spindles, gears, and valves, *See Carbo-nitriding; Carburising.*

**Nitrification.** The conversion of nitrogen existing as organic matter or ammonium compounds into nitric acid, and then by combination with a base into nitrates. This is effected by micro-organisms. In soils it is particularly important, since only in the form of nitrates do most plants absorb the nitrogen they require. It takes place in three stages: first, the conversion of organic nitrogen into ammonia by the action of moulds and the organism *Bacillus mycoides*; second, the conversion of ammonia into nitrites largely by the action of the organisms *Nitrosomonas* and *Nitroso-coccus*; finally, the conversion of nitrites into nitrates, mainly by the action of the organism *Nitro-bacter*.

Essential conditions are (1) suitable food such as potash, lime, sulphates, phosphates, carbon dioxide; (2) a base with which nitrous and nitric acid may combine; (3) suitable temperature, about  $0^\circ$  to  $55^\circ \text{C}$ .; (4) sufficient moisture; (5) absence of strong light; (6) enough oxygen: nitrification does not proceed in waterlogged soil. Potassium carbonate accelerates nitrification in soils rich in humus. Where there is a deficiency of oxygen, a further series of micro-organisms brings about the liberation of free nitrogen from nitrates in soils and manure heaps; this process is termed denitrification.

**Nitro-Benzene.** Yellow liquid with characteristic odour resembling oil of almonds and sometimes used as a cheap substitute in perfumery, etc. It is sometimes called oil of myrbane. An important raw material for dye manufacture, it can be converted to aniline. *See Aniline Dyes.*

**Nitrocellulose.** Term used to designate the esters of cellulose. These are more properly termed the cellulose nitrates, and are made by treating bleached cotton linters with a mixture of sulphuric acid, nitric acid, and water. The product is characterised by its nitrogen content, which falls into three main grades, that with 10.8 p.c. being used in the manufacture of celluloid, that with 11.9–12.2 p.c. (collodion cotton) for production of films and lacquers, and that with 13 p.c. (gun cotton) for explosives. Celluloid, the pioneer plastic of the 1860's, continued to hold its place in world markets, and nitrocellulose lacquers have maintained their popularity as decorative finishes in spite of advances in other synthetic products.

**Nitrogen.** Chemical element; a permanent gas at ordinary temperatures, and chemically fairly inert. It is one of the two chief constituents of the earth's atmosphere, forming 78.05 p.c. by volume (75.5 p.c. by weight) of dry air. It may be said to have been already known to Leonardo da Vinci, who noted that there was a part of the air which was not consumed by respiration or combustion. Its discovery, however, is usually attributed to Daniel Rutherford (1749–1819), professor of botany in the university of Edinburgh, who investigated what was left after oxygen had been removed from the air by chemical combination or animal respiration. The same year (1772) Priestley showed that this "phlogisticated air" made up about four-fifths of ordinary air. In 1776 Lavoisier recognized it as a simple gas which he called *azote* because it would not support life. The name nitrogen, from nitre ( $\text{KNO}_3$ ), suggested by Chaptal in 1791, became generally accepted.

Nitrogen is colourless both as a gas and in the liquid and solid states. It is odourless and tasteless, and only sparingly soluble in water. Its symbol is N; atomic no. 7; at. wt. 14.008; density 1.25 gm. per litre at N.T.P.; b.p.  $-195.84^\circ \text{C}$ .; m.p.  $-210.02^\circ \text{C}$ . Nitrogen does not burn and does not support combustion.

Pure nitrogen can be made in the laboratory by heating an acid solution of ammonium nitrate, by heating ammonia dichromate, or by passing a mixture of nitric oxide and ammonia over red-hot copper. Impure nitrogen can be got by removing oxygen from air by various chemical means such as exposure to phosphorus or to red-hot copper. Commercial production is almost entirely by fractional distillation of liquid air.

Nitrogen gas was at one time used at low pressure to fill electric light bulbs, but was superseded by argon and krypton; it supplies an inert atmosphere for a number of chemical and metallurgical processes which have to be conducted away from air or oxygen; and it is used to flush the petrol tubes with which aeroplanes refuel in mid-air.

**NITROGEN COMPOUNDS.** The compounds of nitrogen and hydrogen are ammonia  $\text{NH}_3$ , which can be prepared by the direct union of the elements; hydrazine or diamide  $\text{N}_2\text{H}_4$ ; and azoimide or hydrazoic acid  $\text{N}_3\text{H}$ . Nitrogen compounds with the haloid elements also occur, nitrogen chloride and iodide being very explosive.

#### Oxides of Nitrogen

There are five oxides of nitrogen: Nitrous oxide, nitrogen monoxide, or laughing gas,  $\text{N}_2\text{O}$ ; nitrogen dioxide, peroxide, or tetroxide  $\text{N}_2\text{O}_4(\text{NO}_2)$ ; nitrogen trioxide  $\text{N}_2\text{O}_3$ ; nitrogen hexoxide  $\text{NO}_3$ ; nitrogen pentoxide  $\text{N}_2\text{O}_5$ .

Nitrogen monoxide was discovered by Priestley in 1772, its exhilarating effects when inhaled being first observed by Davy. It was this effect which gave to it the name of laughing gas. Nitrous oxide is used as an anaesthetic for dental and other surgical operations that require only a short period of unconsciousness. It is prepared by gently heating dried ammonium nitrate, which splits up into nitrous oxide and water. For use as an anaesthetic it needs further purification. It was liquefied by Faraday in 1823.

Nitrogen dioxide was first prepared by van Helmont. It is best made by dissolving copper foil in nitric acid and collecting the gas in a pneumatic trough. Nitrogen trioxide is a red gas made by acting on starch with nitric acid. It forms with water the unstable nitrous acid, which, however, combined as nitrites, forms stable bodies.

Nitrogen trioxide is a dark blue liquid, nitrogen hexoxide a white solid. They are stable only at low

temperatures; otherwise they tend to break up into various mixtures of  $\text{NO}$  and  $\text{NO}_2$ .

Nitrogen pentoxide is also a white solid, stable only below  $0^\circ\text{C}$ . It dissolves very readily, however, in water, forming nitric acid (*q.v.*), of which it is the anhydride.

**NITROGEN CYCLE.** Nitrogen is an essential constituent of all animal and vegetable tissues. Most green plants derive it from inorganic salts (chiefly nitrates) in the soil. Animals are dependent on organic compounds which come ultimately from plants. Both animals and plants use the nitrogen for the production of proteins, of which it forms about 6 p.c.

When in turn the plants and animals die, the decay of their tissues produces ammonium compounds, which are converted into ammonia by the action of various organisms, including *Bacillus mycoides* and a number of moulds. The ammonia is then converted into nitrites by *Nitrosomonas*, *Nitrosocystis*, and *Nitrospira*, and the nitrites into nitrates by *Nitrobacter*. In this form the nitrogen can once more be taken up by plants and incorporated into organic compounds.

This simple cycle is, however, complicated in a number of ways. There are some bacteria, *e.g.* *Chromobacterium denitrificans* and *Pseudomonas*, which break up nitrates and nitrites already in the soil and return the nitrogen to the air in gaseous form. This loss of combined nitrogen is, however, comparatively small. What is more serious is that rain water is continually leaching nitrates out of the soil and carrying them into the sea. Thus the nitrate content of the sea is slowly but steadily increasing, and that of the air slowly but steadily decreasing.

#### Nitrogen Fixation

Meanwhile the land is replenished by two natural agencies. The electric discharges that occur in thunderstorms have the effect of combining a small proportion of nitrogen with oxygen in the air into nitric oxide,  $\text{NO}$ , which is precipitated in solution with rain water as dilute nitric acid,  $\text{HNO}_3$ . It has been calculated that this process deposits about 11 lb. of fixed nitrogen per acre per annum in the temperate zones, and much more in the tropics.

Of even greater importance is the action of a few organisms that can take free nitrogen direct from the air and convert it into nitrates for building up into amino acids and proteins. These include cer-

tain bacteria (*Rhizobium*) which form nodules in the roots of peas, beans, and other leguminous plants; certain free living soil bacteria (*Azotobacter*); a few blue-green algae; and possibly also some fungi and actinomycetes.

This series of interrelated changes, by which a limited amount of fixed nitrogen is made to serve successively the needs of the whole diverse range of living creatures, is commonly called the nitrogen cycle.

**ARTIFICIAL FIXATION OF NITROGEN.** During the 19th century the need for more nitrogen compounds began to be increasingly felt. The introduction of more intensive farming to feed a growing population, coupled with the wasteful piping of sewage direct into rivers and into the sea, greatly increased the loss of nitrates from the land cycle. To this was added a steady increase in the amount of nitrates used in making explosives, chiefly for warlike use.

At first the demand was met by exploiting a few nitrogenous mineral deposits which had formed in very arid parts of the world, *e.g.* the coastal plains of northern Chile, as well as guano from rainless tropical islands. By the 20th century these sources were beginning to seem inadequate. Artificial fixation of nitrogen, *e.g.* by the Swedish process for producing nitric oxide in an electric arc, proved too expensive to be practical, until Heber in Germany invented a method of manufacturing ammonia by passing gaseous hydrogen and nitrogen at high pressure over an iron catalyst. The first synthetic ammonia plant started working in Germany in 1913. Since then the threatened breakdown in the natural nitrogen cycle has to some extent been met by large scale production of artificial fertilisers from synthetic ammonia.

**Nitroglycerine.** The most important of the various substances used in the manufacture of blasting explosives and propellants. The name has been adopted in all countries, although the correct chemical designation is the trinitrate of glycerine. Nitroglycerine was discovered in 1846 by Ascanio Sobrero, an Italian chemist. The possibility of its use as an explosive was not realized until 1859, when it was discovered by Alfred Nobel, who in 1862 erected a factory for its manufacture at Heleneberg, near Stockholm. The frequency of acci-



dents in manufacture caused many difficulties, and, although these were gradually overcome, the use of the oil was inconvenient and dangerous. A great advance was made when Nobel, who had been making continuous efforts to increase the safety of the oil during use and transport, discovered that it was absorbed by the siliceous earth, kieselguhr. For further details of this process see *Dynamite*; *Explosives*.

The new explosive was thus securely established, and its use in Europe and America increased rapidly. Nevertheless, it suffered two defects, (a) in wet conditions water displaced the nitroglycerine, and (b) the use of an inert absorbent decreased the explosive effect. Nobel, however, found that by adding collodion to nitroglycerine the plastic and elastic mass formed could be moulded into cartridges which were comparatively safe to handle, and could be used under water and had a very high explosive effect. The process has been termed "gelatinisation." The nitroglycerine blasting explosives used today are all essentially based upon Nobel's discoveries. The two important advances made since his day have been the development of low freezing and ammonium nitrate explosives.

Nitroglycerine is made from glycerine, a by-product from the manufacture of soaps from oils and fats, by nitration with a mixed nitric and sulphuric acid. During the war, a continuous manufacturing process was operated in this country. The glycerine flows in at the top and the mixed acids at the bottom of a cylindrical vessel, and is circulated by a rotating stirrer. The nitroglycerine-acid mixture is removed continuously through an overflow pipe and passes horizontally to a separator.

Pure nitroglycerine is a yellow oil, of density 1.6, and freezes at 13° C. Its rate of detonation in the open is about 1,600 metres/sec., but when confined, or when initiated by a powerful detonator, it detonates at a much higher rate of about 7,200 metres/sec. See *Explosives*; *Blasting Gelatine*.

**Nitronaphthalenes.** Nitro derivatives of naphthalene first prepared by Laurent, in 1835, by nitrating naphthalene under suitable conditions. The most important is alpha-nitronaphthalene ( $C_{10}H_7NO_2$ ), prepared on a small scale by dissolving naphthalene in glacial acetic acid, adding strong

nitric acid, and heating for half an hour. On a commercial scale a mixture of sulphuric acid and nitric acid is employed. Nitronaphthalene is a solid which crystallises in long lustrous yellow needles, insoluble in water, but readily soluble in benzene, ether, carbon bisulphide, and hot alcohol. Nitronaphthalenes render nitroglycerine non-sensitive to concussion, and when present in small quantities have the important property of preventing dynamite from freezing. The main use of the alpha compound is as an intermediate in the manufacture of dyes.

**Nitrous Ether.** This liquid, under its chemical name, ethyl nitrate, is mentioned under *Ethyl*.

**Nitrous Oxide** OR LAUGHING GAS. The only inorganic gas which is serviceable as an anaesthetic agent. The gas was discovered by Priestley in 1772, but was first brought to general notice in 1800 by Sir Humphry Davy who discovered and made known the exhilarating properties which earned for it the name of laughing gas. It is colourless, heavier than air, and has a faint sweet smell. Nitrous oxide is probably the safest general anaesthetic known; anaesthesia develops rapidly, but is not deep unless high concentrations are used. The gas has proved of great value in dentistry. See *Anaesthesia*; *Nitrogen*.

**Niue** OR SAVAGE ISLAND. Pacific island, a dependency of New Zealand. It was named by its discoverer, Capt. Cook, 1774. It is 350 m. S.E. of Samoa, and consists of upheaved coral arranged in two terraces 90 and 220 ft. above mean sea level respectively. The native villages are all on the lower terrace. Copra is the principal export. Alofi is the port and the chief village. Area 100 sq. m. Pop. (1956 est.) 4,700.

**Nivation.** In geology, the action of ice and snow on the land surface near and around an ice-sheet. The action includes frost shattering and removal of the broken debris by rain-wash or wind; and solifluxion (*q.v.*) which is the flow of surface soil as sludge when the snow melts but the melt water is unable to soak away because the ground below is still frozen. See *Coombe Rock*; *Glacier*; *Ice Age*.

**Nive.** River of Spain and France. It rises in N. Spain, and flowing through the Pyrenees joins the Adour at Bayonne; its length is 45 m. In the Peninsular War there were engagements along this

river Dec. 10-13, 1813. On Soult's retreat into Bayonne, after his defeat on the Nivelle, Nov. 10, 1813, Wellington placed his forces on either side of the river Nive. Soult made a sortie, Dec. 10, and launched a heavy attack against a portion of the British forces under Gen. Hope, but was held at bay. Engagements took place on the following days until Dec. 13, when Soult hurled a force of 35,000 men against Hill's body of 17,000. Wellington's timely arrival saved Hill, and Soult withdrew with heavy losses. See *Peninsular War*.

**Nivelle,** ROBERT GEORGES (1856-1924). A French general. Born at Tulle, Oct. 15, 1856, he



R. G. Nivelle,  
French general

joined the French army in 1878. On the outbreak of the First Great War in command of an artillery regiment, he was successively promoted brigadier-general and general of division. Placed at the head of the 2nd army, he played a great part in the battle of Verdun, being, as the result of his success, chosen to succeed Joffre; and on Dec. 12, 1916, he was appointed c.-in-c. of the armies of the N. and the N.E. In April, 1917, he planned and conducted a powerful offensive in the Craonne-Reims area; but the losses were so heavy as to discount utterly the small gains made. The French govt. called off the offensive and Nivelle was superseded by Pétain. In Dec., 1917, he was appointed c.-in-c., N. Africa. Retiring in 1921, he died March 23, 1924. See *Aisne Battles*; *Verdun*.

**Nivelles** (Flemish Nyvel). A town of Belgium, in the prov. of Brabant. It lies 18½ m. by rly. S. of Brussels, on the Thines, is a rly. junction, and has metal works, paper manufactures, and tobacco and furniture industries. The Romanesque church of S. Gertrude was founded in the 11th century. Pop. 12,500.

**Niven,** DAVID (b. 1909). British film actor. The son of Gen. W. G. Niven, he was born at Kiriemuir, Angus March 1, 1909, and educated at Stowe and Sandhurst. After adopting a military career for some years



David Niven,  
British film actor

he went to the U.S.A. and appeared in M.G.M. films. He came to the fore as Edgar Linton in *Wuthering Heights*, 1939. During the Second Great War he was in such outstanding British pictures as *The First of the Few* and *The Way Ahead*, and then starred in *A Matter of Life and Death*, 1946, also in the British film *Bonny Prince Charlie*, 1948.

**Niven**, FREDERICK JOHN (1878-1944). British author. Born at Valparaiso, March 31, 1878, he was educated in Glasgow at Hutcheson's grammar school and the school of art. Beginning with an adventure story, *The Lost Cabin Mine*, 1908, he published books on travel, poems, and novels, including *Justice of the Peace*, 1914, which later gained him an American reputation. One of his best-known stories was *Mrs. Barry*, 1933, describing the life of a Glasgow tenement landlady. He lived much in British Columbia and travelled widely throughout the New World, recording some of his journeys in *Coloured Spectacles*, 1938. Niven died at Vancouver, Jan. 30, 1944.

**Nivernais**. Province of France, represented since 1792 by the dept. of Nièvre (*q.v.*) and part of Yonne. It lay contiguous with Berry, Orléanais, Burgundy, and Bourbonnais, and became a county in the late 9th century, Otto William of Burgundy being its first hereditary count. Held by the rulers of Flanders, 1280-1384, it passed to Burgundy and then to Cleves. A duchy from 1538, it was held by the Gonzague family from 1562 until bought by Mazarin, 1659, and given by him to his nephew, Jules Philippe Mancini. Its capital was Nevers. The Nivernais canal (109 m.), constructed 1784-1842, joins the rivers Loire and Yonne, passing from Decize to Auxerre.

**Nivôse**. Fourth month of the year as rearranged during the French Revolution. It began on Dec. 21 or 22, and the word means the month of snow.

**Nixie**, NIX, OR NICK. Water sprite in the folklore of the peoples of N. Europe. The name occurs in various forms in German, Danish, Swedish, Icelandic, and English legend. It was often regarded as malignant, and its appearance presaged shipwreck and drowning. In its Anglo-Saxon form, *nicor*, it is mentioned in *Beowulf*, where several are slain by the hero. It has survived as one of the names used for the devil, Old Nick.

**Nizam** (Arab., administration). Title of the sovereign of the Indian



Noailles. Members of the French family. Left to right: Anne Jules, 1650-1708; Louis Antoine, 1651-1729; Adrien Maurice, 1678-1766

state of Hyderabad (*q.v.*). The first holder was Asaf Jah (d. 1748), who was styled *Nizam-ul-Mul* (administrator of the kingdom).

**Njördh** OR NJÖRDHR. In Norse mythology, the god of the sea, and of seafaring and wealth. One of the race of the Vanir, he is husband of Skadhi and father of Freyr and Freyja. In the war with the Aesir he becomes a hostage. The German Hertha is his female counterpart.

**N.K.V.D.** Former name of the political police of the U.S.S.R., called successively Cheka, OGPU, N.K.V.D., and M.V.D. See OGPU.

**Noah**. O.T. patriarch. Son of Lamech and father of Shem, Ham, and Japheth, by divine command he made an ark in which he and his family were preserved during the Deluge (*q.v.*). The invention of wine is attributed to him (Gen. 6-9).

**Noah**, THE BOOK OF. One of the non-canonical O.T. Apocrypha or Pseudepigrapha (*i.e.* works written under an assumed name). It has not been preserved as an independent work, but fragments of it are incorporated in the Ethiopic Book of Enoch, and it is referred to in the Book of Jubilees (10, v. 13, and 21, v. 10). The work, which gives an account of the laws made by Noah for his children, would seem to have been written between 200 and 161 B.C.

**Noailles**. Name of a noble French family. Originating at the château of this name near Brive, Corrèze, the family gave its name to the town of Noailles, Oise, formerly called Longvillers. Antoine de Noailles (1504-62) was chamberlain to Francis I, admiral of Guienne, and ambassador to England, 1533-36; his brother François (1519-85), was bishop of Aix and ambassador to Venice, 1557, and to Constantinople, 1572. Anne Jules, duke of Noailles (1650-1708), a distinguished soldier, repressed Protestants in Languedoc, 1681, and was made marshal in 1693. Louis Antoine (1651-1729) was archbishop of Paris, 1695, and cardinal, 1700, and an opponent of the Quietists.

Adrien Maurice, 3rd duke (1678-1766), served in the wars of Louis

XV, and was an able general, finance president in 1715 and marshal of France, 1734, but was defeated at Dettingen, 1743. Louis, 4th duke (1713-93), was made marshal in 1775. His brother Philippe (1715-94), duke of Mouchy, an able soldier, also made marshal 1775, was guillotined with his wife. Jean François Paul, 5th duke (1739-1824), was a chemist, and his brother Emmanuel Marie Louis (1743-1822) a distinguished diplomat. Paul, 6th duke (1802-85), was an historian; Jules, 7th duke (1826-95), an economist and publicist.

**Noailles**, ANNA COMTESSE DE (1876-1933). French poet. Daughter of Prince Bibesco, she was born in Paris, Nov. 15, 1876, and in 1897 married a grandson of Jules, duc de Noailles. Her first volume of verse, *La Coeur Innombrable*, 1901, made an immediate impression, chiefly on account of its pagan voluptuousness. One of the greatest French poets of her time she excelled in passionate love poetry and in nature-poems notable for exotic intensity. Her best-known works included *L'Ombre des Jours*, 1902; *Les Vivants et les Morts*, 1913; *Les Forces Éternelles*, 1920; *Le Livre de ma Vie*, 1932. She died in Paris, April 30, 1933.

**Nobel**, ALFRED BERNHARD (1833-96). Swedish chemist. Born at Stockholm, Oct. 21, 1833, and educated in St. Petersburg and in the U.S.A., he assisted his father, an inventor of considerable ability. During 1859-61 they devoted themselves to the study of explosives (*q.v.*), perfecting nitroglycerine. The improved explosive was called pyroglycerine, then glonoine oil, and later Nobel's blasting oil. The inconvenience of a liquid explosive led Nobel, in 1866, to mix the liquid with absorbent earth, forming dynamite. He settled in Paris in 1873, inventing shortly after the still more powerful nitrogelatine or gelignite. He died Dec. 10, 1896. See Nobel Prize. Consult *Life*, H. Pauli, 1948; *N., the Man and His Prizes*, H. Schuck and others, 1950.



Alfred B. Nobel, Swedish chemist



# NOBEL PRIZE: LIST OF AWARDS FROM ITS FOUNDATION, IN 1901, TO 1939

Details of the lives and work of most of the Nobel prizewinners will be found under their own names throughout this Encyclopedia. Any later awards, announced after the completion of this edition of the Encyclopedia, will be included under the heading Nobel Prize in the Novissima Verba section at the end of the final volume

Year	Physics	Chemistry	Medicine	Literature	Peace
1901	W. K. Röntgen (Ger.)	J. H. van't Hoff (Du.)	E. A. von Behring (Ger.)	R. F. A. Sully-Prudhomme (Fr.)	H. Dunant (Swiss)
1902	H. A. Lorentz (Du.)	E. Fischer (Ger.)	R. Ross (G.B.)	T. Mommsen (Ger.)	F. Passy (Fr.)
1903	P. Zeeman (Du.)	S. A. Arrhenius (Swed.)	N. R. Finsen (Dan.)	B. Björnson (Norw.)	E. Ducommun (Swiss)
1904	H. A. Becquerel (Fr.)	Sir W. Ramsay (G.B.)	I. P. Pavlov (Russ.)	F. Mistral (Fr.)	A. Gobat (Swiss)
1905	P. and M. Curie (Fr.)	A. von Baeyer (Ger.)	R. Koch (Ger.)	J. Echegaray (Span.)	W. R. Cremer (G.B.)
1906	Lord Rayleigh (G.B.)	H. Moissan (Fr.)	C. Golgi (It.)	H. Sienkiewicz (Pol.)	Institute of International Law
			S. Ramon y Cajal (Span.)	G. Carducci (It.)	B. von Suttner (Aust.)
1907	P. Lenard (Ger.)	E. Buchner (Ger.)	C. L. A. Laveran (Fr.)	R. Kipling (G.B.)	T. Roosevelt (U.S.)
1908	J. J. Thomson (G.B.)	E. Rutherford (G.B.)	P. Ehrlich (Ger.)	R. Eucken (Ger.)	E. T. Moneta (It.)
			E. Metchnikoff (Can.)		L. Renault (Fr.)
1909	A. A. Michelson (U.S.)	W. Ostwald (Ger.)	T. Kocher (Swiss)	S. Lagerlof (Swed.)	K. P. Arnoldson (Swed.)
1910	G. Lippmann (Fr.)	O. Wallach (Ger.)	A. Kossel (Ger.)	P. Heyse (Ger.)	F. Bajer (Dan.)
1911	F. Braun (Ger.)	M. Curie (Fr.)	A. Gullstrand (Swed.)	M. Maeterlinck (Belg.)	A. M. F. Beernaert (Belg.)
1912	G. Marconi (It.)	V. Grignard (Fr.)	A. Carrel (U.S.)	G. Hauptmann (Ger.)	P. d'Estournelles de Constant (Fr.)
1913	J. D. van der Waals (Du.)	P. Sabatier (Fr.)	C. Richet (Fr.)	R. Tagore (India)	International Peace Bureau
1914	W. Wien (Ger.)	A. Werner (Swiss)	R. Barany (Aust.)	No award	T. M. C. Asser (Du.)
1915	M. von Laue (Ger.)	T. W. Richards (U.S.)	No award	R. Rolland (Fr.)	A. H. Fried (Aust.)
1916	W. H. Bragg (G.B.)	R. Willstätter (Ger.)	No award	C. G. V. von Heidenstam (Swed.)	E. Root (U.S.)
1917	W. L. Bragg (G.B.)	No award	No award	K. Gjellerup (Dan.)	
1918	No award	No award	No award	H. Pontoppidan (Dan.)	International Red Cross
1919	C. G. Barkla (G.B.)	F. Haber (Ger.)	J. Bordet (Belg.)	No award	No award
1920	M. Planck (Ger.)	No award	A. Krogh (Dan.)	C. Spitteler (Swiss)	Woodrow Wilson (U.S.)
1921	J. Stark (Ger.)	W. Nernst (Ger.)	No award	K. Hamsun (Norw.)	L. Bourgeois (Fr.)
1922	C. E. Guillaume (Swiss)	F. Soddy (G.B.)	No award	A. France (Fr.)	K. H. Brantlin (Swed.)
1923	A. Einstein (Ger.)	F. W. Aston (G.B.)	A. V. Hill (G.B.)	J. Benavente (Span.)	C. L. Lange (Norw.)
1924	N. Bohr (Dan.)	F. Pregl (Aust.)	O. Meyerhof (Ger.)	W. B. Yeats (Irish)	F. Nansen (Norw.)
1925	R. A. Millikan (U.S.)	No award	F. G. Banting (Can.)	No award	No award
1926	K. M. G. Siegbahn (Swed.)	R. Zsigmondy (Aust.)	J. J. R. Macleod (Can.)	W. Reymont (Pol.)	A. Chamberlain (G.B.)
1927	J. Franck (Ger.)	The Svedberg (Swed.)	W. Einthoven (Du.)	G. B. Shaw (G.B.)	C. G. Dawes (U.S.)
1928	G. Hertz (Ger.)	H. Wieland (Ger.)	No award	G. Deledda (It.)	A. Briand (Fr.)
1929	J. B. Perrin (Fr.)	A. Windaus (Ger.)	J. Fibiger (Dan.)	H. Bergson (Fr.)	G. Stresemann (Ger.)
1930	A. H. Compton (U.S.)	H. K. A. S. von Euler-Chelpin (Swed.)	J. W. von Jauregg (Aust.)	S. Undset (Norw.)	F. Buisson (Fr.)
1931	C. T. R. Wilson (G.B.)	A. Harden (G.B.)	C. J. H. Nicolle (Fr.)	T. Mann (Ger.)	L. Quidde (Ger.)
1932	O. W. Richardson (G.B.)	H. Fischer (Ger.)	C. Eijkman (Du.)	Sinclair Lewis (U.S.)	No award
1933	L. V. de Broglie (Fr.)	F. Bergius (Ger.)	F. G. Hopkins (G.B.)	E. A. Karlfeldt (Swed.)	F. B. Kellogg (U.S.)
1934	Sir C. V. Raman (India)	C. Bosch (Ger.)	K. Landsteiner (U.S.)	John Galsworthy (G.B.)	N. Söderblöm (Swed.)
1935	No award	I. Langmuir (U.S.)	O. Warburg (Ger.)	I. A. Bunin (Russ.)	Jane Addams (U.S.)
1936	W. Heisenberg (Ger.)	No award	Sir C. S. Sherrington (G.B.)	A. Henderson (G.B.)	N. Murray Butler (U.S.)
1937	E. Schrödinger (Aust.)	H. C. Urey (U.S.)	E. D. Adrian (G.B.)	No award	No award
1938	P. A. M. Dirac (G.B.)	F. Joliot and Mme. Joliot-Curie (Fr.)	T. H. Morgan (U.S.)	E. O'Neill (U.S.)	Sir N. Angell (G.B.)
1939	No award	P. J. W. Debye (Du.)	G. H. Whipple (U.S.)	L. Pirandello (It.)	A. von Ossietzky (Ger.)
		W. N. Haworth (G.B.)	G. R. Minot (U.S.)	No award	C. de S. Lamas (Arg.)
		P. Karrer (Swiss)	W. P. Murphy (U.S.)	R. M. du Gard (Fr.)	Viscount Cecil (G.B.)
		R. Kuhn (Ger.)	H. Spemann (Ger.)	Pearl S. Buck (U.S.)	Nansen Office
		L. Ruzicka (Swiss)	Sir H. H. Dale (G.B.)	F. E. Sillanpää (Finn.)	No award
		A. F. J. Butenandt (Ger.)	O. Loewi (Aust.)		
			A. Szent-Györgyi (Hung.)		
			C. Heymans (Belg.)		
			G. Domagk (Ger.)		

**Nobel Prize.** Series of five prizes awarded annually to persons or bodies that have contributed to the development of (1) physics, (2) chemistry, (3) medicine or physiology, (4) literature of an idealistic tendency, (5) the cause of peace. The prizes, sums of money which vary slightly from year to year but have each an average value of over £10,000, are awarded from the income of a trust fund of £1,750,000 established by the will of Alfred Nobel (*q.v.*). The fund is administered by the Nobel Institute, Stockholm, with a board of 15 members. Awarding authorities are the Swedish royal academy of science, the Royal Carolingian medical-surgical institute of Stockholm, the Swedish academy of literature, and a committee of the Norwegian parliament for the peace prize.

Marie Curie, who shared with her husband half the physics prize in 1903 and received that for chemistry in 1911, is the only person whose work has been twice recog-

nized by a Nobel award. First awards were made in 1901. The accompanying tables list all Nobel prize-winners from 1901 until 1957.

**Nobile, UMBERTO** (b. 1885). Italian airman and aeronautical engineer. Born at Lauro, Avellino, Jan. 21, 1885, he constructed dirigible airships of the semi-rigid type for the Italian government, and was director of the military airship factory at Rome 1919-29. He designed and commanded the dirigible Norge which flew from Rome to Alaska via the North Pole in the Amundsen-Ellsworth-Nobile expedition of 1926. For his part in this achievement he was promoted general. In 1928 he led an Italian expedition to the North Pole in the dirigible Italia, but had to land; a sensational rescue was carried out by the Russian ice-breaker Krassin. In 1929 a court of inquiry held him responsible for the accident, and he resigned his post to become professor at the Naples engineering school. He was appointed deputy-chief of Soviet

Russian airship construction, 1932, by permission of the Italian government; but in 1936 he was recalled. In 1939 he went to the U.S.A., where he became head of the engineering department of a school of aeronautics. He returned to Italy, 1945, as professor of aeronautical engineering at Naples University. He published several books on his polar flights.

**Nobility** (Lat. *nobilitas*, from *noscere*, to know). Literally, the state of being noble. In a narrower sense it suggests belonging to an old and noted family, and is used for the peers and their relatives as a body. *See* Peerage.

**Noble.** Term used for one who is regarded as of superior birth. It is of Roman origin, and is also found among Teutonic peoples, where the word *adel*, or *ethel*, may be translated noble. Some held the belief that the nobles were the descendants of the gods. In the class distinctions that were accentuated by the feudal system, the nobles formed a separate class in most

NOBEL PRIZE: LIST OF AWARDS FROM 1943 (NONE MADE 1940-42)

Year	Physics	Chemistry	Medicine	Literature	Peace
1943	O. Stern (U.S.)	G. Hevesy (Hung.)	H. Dam (Dan.) E. A. Doisy (U.S.)	No award	No award
1944	I. I. Rabi (U.S.)	O. Hahn (Ger.)	J. Erlanger (U.S.) H. S. Gasser (U.S.)	J. V. Jensen (Dan.)	International Red Cross
1945	W. Pauli (Aust.)	A. Virtanen (Fin.)	Sir A. Fleming (G.B.) Sir H. W. Florey (G.B.) O. B. Cham (Ger.)	G. Mistral (Chile)	C. Hull (U.S.)
1946	P. W. Bridgman (U.S.)	J. B. Sumner (U.S.) W. M. Stanley (U.S.) J. H. Northrop (U.S.)	H. J. Muller (U.S.)	H. Hesse (Swiss)	E. G. Balch (U.S.) J. R. Mott (U.S.)
1947	Sir E. Appleton (G.B.)	Sir R. Robinson (G.B.)	Prof. and Mrs. C. F. Cori (U.S.) B. Houssay (Arg.)	A. Gide (Fr.)	Society of Friends
1948	P. M. S. Blackett (G.B.)	A. Tiselius (Swed.)	P. Muller (Swiss)	T. S. Eliot (G.B.)	No award
1949	H. Yukawa (Jap.)	W. F. Giauque (U.S.)	W. R. Hess (Swiss) A. Moniz (Port.)	W. Faulkner (U.S.) [awarded 1950]	Lord Boyd Orr (G.B.)
1950	C. F. Powell (G.B.)	Otto Diels (Ger.) Kurt Alder (Ger.)	P. S. Hench (U.S.) E. C. Kendall (U.S.) T. Reichstein (Swiss)	Bertrand Russell (G.B.)	R. J. Bunche (U.S.)
1951	Sir J. Cockcroft (G.B.) E. T. S. Walton (Irish)	G. T. Seaborg (U.S.) E. M. Macmillan (U.S.)	M. Theiler (S. Africa)	P. F. Lagerkvist (Swed.)	Léon Jouhaux (Fr.)
1952	E. Purcell (U.S.) Felix Bloch (U.S.)	A. J. P. Martin (G.B.) R. L. M. Synge (G.B.)	S. A. Waksman (U.S.)	François Mauriac (Fr.)	A. Schweitzer (Fr.) [awarded in 1953]
1953	F. Zernike (Du.)	H. Staudinger (Ger.)	H. A. Krebs (G.B.) F. Lippman (U.S.)	Sir Winston Churchill (G.B.)	G. C. Marshall (U.S.)
1954	M. Born (Ger.) W. Bothe (Ger.)	L. Pauling (U.S.)	J. F. Enders (U.S.) T. H. Weller (U.S.) F. C. Robbins (U.S.)	E. Hemingway (U.S.)	U.N. Office for Refugees [awarded in 1955]
1955	W. E. Lamb (U.S.) P. Kusch (U.S.)	V. de Vigneaud (U.S.)	H. Theorell (Swed.)	H. K. Laxness (Icelandic)	No award
1956	W. Shockley (U.S.) W. H. Brattain (U.S.) J. Bardeen (U.S.)	Sir Cyril Hinshelwood (G.B.) N. Semenov (Russ.)	A. F. Cournand (U.S.) D. W. Richards (U.S.) W. Forssmann (Ger.)	J. Benavente (Span.)	No award
1957	Lee Tsung-dao (Chin.) Yang Chen-ning (Chin.)	Sir Alexander Todd (G.B.)	D. Bovet (Ital.)	A. Camus (Fr.)	Lester Pearson (Can.)



European countries, becoming one of the estates of the realm where these arose. In England they formed the house of lords. Today a noble simply means a peer.

**Noble.** Obsolete English gold coin, first struck by Edward III. Its value was 6s. 8d. Half and quarter nobles were also coined.



Noble. Obverse and reverse of gold coin of Edward III. Actual size  $1\frac{1}{8}$  in. diameter

**Noble, SIR ANDREW** (1832–1915). A British physicist. Born at Greenock, Sept. 15, 1832, he entered the Royal Artillery, 1849, became secretary to the committee on rifled cannon, 1858, to that on plates and guns, 1859, and a member of a number of other committees on explosives and ordnance. In 1860 he joined Sir William Armstrong. His investigations into the effects of explosive powders had a revolutionary effect on the construction of big guns.

He devised the Noble pressure gauge for estimating the pressure developed in the chamber of a gun by the propellant charge. He also invented the chronoscope, an instrument for measuring minute intervals of time. Gold medallist of the R.S. 1880, K.C.B. 1893, bart. 1902, he died Oct. 22, 1915.

**Noctiluca** (Lat. *nox*, night; *lucēre*, to shine). Genus of marine flagellate infusorians. They are circular, about 1-50th of an in. in diameter, and have a whip-like process by means of which they swim. Luminescent, they occur in vast swarms in the British seas.

**Nocturne** (Ital. *notturmo*). A musical composition, usually of a placid character. Some nocturnes are of the nature of serenades, others are rather music to accompany sleep scenes, such as Mendelssohn's *Notturmo* in the music to *A Midsummer Night's Dream*. John Field (1782–1837) probably first used the title for his short, romantic pianoforte pieces, and Chopin adopted it for more famous ones. Whistler adopted the name to describe certain of his paintings representing twilight or night impressions, e.g. *Nocturne, blue and gold—Battersea Bridge*.

**Noddy** (*Anous stolidus*). Small tern found in the tropics. It is blackish in colour, with a light

patch on the forehead, and distinguished by its graduated tail and the shortness of the middle toe. It breeds in vast colonies off the coasts of Florida and S. America, the nest being a bracket of seaweed projecting from the rocks, one nest serving for hundreds of years.

**Node.** In astronomy, one of the two points in which the orbit of a planet or a moon intersects the ecliptic. The one at which the body passes to the N. of the ecliptic is termed the ascending, the other the descending node. The celestial longitude of the ascending node is one of the astronomical elements which determine the orbit of a planet. The nodes of the planets, on account of planetary perturbations, move slowly round the ecliptic backwards, the period for Mercury, for example, being 166,000 years.

A node in acoustics is the point, line, or surface of an interference pattern at which the amplitude of the sound pressure or particle-velocity is zero. Hence the use of distinguishing terms pressure node and velocity node. As complete interference seldom takes place in practice, the term node is generally associated with minimum rather than zero amplitude.

**Nō Drama.** See *Nō* plays.

**Nogent-sur-Marne.** Town of France, virtually a residential suburb of Paris. In the dept. of Seine, it is 6 m. E. of the city proper, and close to the Bois de Vincennes. On a hill above the Marne, it has a Gothic church, and a monument to Watteau who died here; also chemical factories and pottery works. Pop. (1954) 23,581.

Nogent-sur-Seine, 35 m. N.W. of Troyes, in Aube dept., has a notable church, S. Laurent. Pop. (1954) 3,333.

**Noise.** Any disorganized sound, as distinct from the organized sounds of music. Advance of mechanised civilization has been accompanied by a crescendo of noises, many of which have become public nuisances, and certain types of noise are controlled in the U.K. by legislation; e.g. motor cycle exhausts, and the unnecessary sounding of motor horns. The Noise Abatement League has obtained compulsory control of the noise emitted from other machines and processes.

Sound "intensity" is measured in bels and decibels, which represent the amount of physical energy in the sound waves. They are based on a logarithmic scale, so that if the energy is increased tenfold the intensity is said to increase

by one bel. Zero is fixed at a level (barely audible) where the acoustical pressure is 0.0002 dynes per sq. cm. All sounds of the same intensity do not seem equally loud to the ear; "loudness" is therefore measured by comparison with a pure tone (1,000 c/s) which can be varied in intensity till it matches; the units are phons. The loudest everyday noise is emitted by an aeroplane propeller; next comes a boiler factory, a riveting machine, and, fourth, a clap of thunder. The explosion of Krakatoa in 1883 is said to be the loudest noise ever heard.

**Nola.** City of Italy, in the prov. of Naples. Situated 21 m. E.N.E. of Naples, it has a Gothic cathedral and remains of the 4th-century church of S. Felix. Built on the site of a city founded probably by Ausonians or Etruscans, it was taken by Rome in 313 B.C. The emperor Augustus died here. Pop. (1951) 21,896.

**Nollekens, JOSEPH** (1737–1823). British sculptor. Born in Soho, Aug. 11, 1737, the son of Joseph Francis Nollekens, a landscape painter, called Old Nollekens, he studied at Shipley's school and under Scheemakers. After ten years in Rome, 1760–70, he settled in London, and was elected A.R.A. in 1771 and R.A. in 1772. His works included portrait busts of George III, Wellington, William Pitt, and many other celebrities. He died in London, April 23, 1823. His eccentric appearance and character are described in J. T. Smith's *Nollekens and his Times*, new ed. 1949.

**Nomad** (Gr. *nomades*, pastoral rangers). Term denoting in general usage peoples who range from place to place in quest of sustenance. They may hunt afoot, like the Australian aborigines and the Bushmen, or on horseback, like the pampas Indians, or they may be quasi-industrial van-dwellers, like gypsies. In ethnological usage the term denotes specifically wandering pastoralists such as Kirghiz and Beduins whose economic life and culture were developed on Eurasian steppes and African grasslands along the margins of cultivable lands or deserts.

**No Man's Land.** Term applied to a piece of unused or unowned land. A plot of waste land outside London Wall where executions took place was so designated in the 14th century. In the 18th century the term was used for a space for storing ropes, blocks, etc., on ships. In the First Great War it was used for the terrain between

the front-line trenches of the opposing forces.

**Nome** (Gr. *nomos*, district). Territorial division in ancient Egypt. In the XIIth dynasty there were 20 in Lower Egypt and 22 in Upper Egypt and 13 in the Sudan. There were probably 100 under the new empire, and 60 in Roman times. Each had its civil capital, residence of the nomarch, and seat of the patron deity.

Nome in modern Greece is the name of an administrative division of the country.

**Nome.** City of Alaska, U.S.A. on Seward Peninsula. It stands on the N. shore of Norton Sound, and gold was first worked here in 1899. The pop. increased to 20,000 in the following years, when the gold yield of the region rapidly rose. Later it declined: at the census of 1950 it was 1,876.

**Nominalism** (Lat. *nomen*, name). A term in scholastic philosophy, opposed to realism. It was first introduced by Roscellinus at the end of the 11th century. Its upholders asserted that genera and species, the universal notions, had no real existence, being merely sounds and words, products of abstraction; the individual alone has a real existence. Long before, Antisthenes the Cynic had declared that he could see a horse, but not horseness (the concept of horse). Realism won the day, but in the 14th century Occam again brought nominalism into favour. Abelard's conceptualism was a kind of middle term between nominalism and realism. See Philosophy; Realism.

**Nominative** (Lat. *nominare*, to name). In inflexional languages, the name given to the case indicating the subject or attribute. In the Indo-European group the ending of the nominative singular masculine and feminine was *-s* (*equus*, *vis*) or the simple stem (*pater*, *musa*); of the neuter *-m*, or the simple stem (*iugum*, *mare*); in the plural *os* (*es*), *oi* (*i*), *ai* (*ae*) for masculine and feminine (*patres*, *oves*, *vici* for *vici*, *musae* for *musai*). It is probable that the nominative suffix is in its origin pronominal. The nominative is known as *casus rectus*, the upright, independent case, which is in no way subordinate to the other elements of the sentence.

**Non-belligerency.** Term used to describe an attitude of friendly neutrality adopted by a country which, while not taking an active part in hostilities between other countries, gives moral support to the side with which she has racial or political affinities. Non-belliger-

ency does not infringe international law, since a neutral is entitled to sympathise with a belligerent, provided she does not commit acts contrary to her duty of impartiality. Until she attacked France in 1940, Italy adopted non-belligerency in favour of Germany in the Second Great War. See Neutrality.

**Non-combatant.** Term for those who, in time of war, are not treated as fighting men, either by their own people or by the enemy. In land and sea warfare it is still possible to maintain some distinction. Non-combatants, who include certain members of the forces, e.g. chaplains, doctors, and clinical workers, as well as civilians, may not, according to international law, be directly attacked, although those attached to the armed forces are liable to injury from any general attack. Hague air warfare rules were drawn up in 1923, but never became binding, as they were not ratified. These prohibited bombing for the purpose of terrorising civilians or of injuring non-combatants.

**Non-commissioned Officer.** Soldier, marine, airman, or member of the Women's Royal Army Corps or Women's Royal Air Force of rank above private and below warrant officer. The four principal non-commissioned ranks in the British Army, Women's Royal Army Corps, and Royal Marines are lance-corporal, corporal, sergeant, and staff sergeant. In the artillery the lance-corporal is called a lance-bombardier and the corporal a bombardier. The three non-commissioned ranks in the R.A.F. and W.R.A.F. are corporal, sergeant, and flight sergeant. All non-commissioned ranks are described separately in this Encyclopedia. N.C.O.s in the Royal Navy are called petty officers.

**Nonconformity.** Name for a religious movement in opposition to, or in independence of, an established Church. Such a movement can, of course, occur only in countries where an established Church exists, and in general speech the word is confined to England.

The publication of the first prayer book of Edward VI, and the Act of Uniformity which required its use in all churches offended the Puritan party in the Church of England and forced them to a statement of their position which was virtually identical with that of a free church in a free state. Under Elizabeth two parties came into being: the Presbyterians, led by Cartwright, who rejected episcopacy but retained

their belief in the establishment: and the Separatists, led by Robert Browne (*q.v.*), who advocated the setting up of independent and autonomous churches. Supporters of both sections were regarded by the law as dissenters and subjected to pains and penalties. A compromise suggested by the Puritans at the Hampton Court conference, 1604, being rejected, the cleavage between the establishment and both the Puritans and Separatists became more pronounced. It was further accentuated by the policy of Archbishop Laud, who insisted on the divine right and apostolic succession of the episcopate. This drove together in a common interest the various types of nonconforming Christians. The religious intolerance of Charles I was one of the chief causes of the Civil War, which was an uprising as much against prelacy in the church as against despotism in the state. The first period of the war saw the triumph of Presbyterianism, through the Westminster Assembly and the Long Parliament. But the country was never Presbyterian at heart, and the Independents stood out against the attempt to make it so.

Charles II undertook to maintain religious toleration, but failed to keep his promise. The Act of Uniformity, which required of all ministers an unfeigned assent and consent to the book of common prayer, was intended to drive the Puritans out of the church. In this it succeeded, some 2,000 ministers being ejected. Dissenting chapels were instituted all over the country, but the Conventicle Act of 1664 made it a penal offence to attend their services, and the Five Mile Act prohibited their ministers from exercising their vocation within five miles of any corporate town, also from keeping schools. Yet Nonconformity, holding its meetings in secret, so continued to flourish that by 1672 Charles had to admit the failure of persecution.

The Toleration Act of 1689 did not repeal previous legislation against Nonconformists, but did away with the penalties of disobedience. Under it, 82,418 licences for meeting-houses were taken out in the next ten years.

The 18th century saw Nonconformity engaged in a struggle for existence, suffering repeated hostile measures, but gradually escaping some of its disabilities. The Occasional Conformity Act, 1711, effectively excluded Nonconformists from the country's public life, and the Schism Act, 1714, from all



opportunities of higher education; but both were repealed in 1719. Under the house of Hanover a more tolerant spirit prevailed.

The 19th century witnessed a gradual but sure process of emancipation. The Conventicle Act, the Five Mile Act, and others were repealed in the first quarter of the century (though the original Act of Uniformity still remains). At the same time began a campaign for the disestablishment of the church, successful so far as Ireland (1869) and Wales (1920) were concerned. From 1871 Nonconformists were once again admitted to the ancient seats of learning. A further advance was marked by the founding of the Free Church Council (*q.v.*) in 1892, and by the tendency since that time to speak of the Nonconformist bodies as a whole more accurately as the Free Churches. See Baptists; Congregationalism; Disestablishment; Methodism; Society of Friends, etc.

**Nones** (Lat. *nonus*, ninth). The fifth day of the month in the Roman calendar, but in March, May, July, and Oct. the seventh day. See Calendar; Calends; Canonical Hours.

**Nonesuch Press.** British publishing firm founded 1923 by (Sir) Francis Meynell, who remained director of publications after the amalgamation of the organization with Desmond Harmsworth in 1932. It specialized in limited editions of classics designed to use mechanical means of book printing, illustration, and production to the best advantage. The Nonesuch Shakespeare, edited by Herbert Farjeon, was outstanding among its many notable productions.

**Non-Intervention.** Term used to describe the official policy of European powers in the Spanish civil war of 1936-39. They agreed not to supply arms or to send troops to either of the contending Spanish parties, and a non-intervention committee was set up in London to enforce the agreement. International control officers at ports and frontier posts examined men and goods in transit, while a naval patrol operated along the Spanish coasts. Nevertheless large quantities of war material and thousands of trained men infiltrated into Spain to assist one side or the other. The principal offenders were Russia, supporting the republicans, and Italy and Germany, who eventually made possible Gen. Franco's victory. The non-intervention committee ceased to function before the end of the war. See Spanish Civil War.

**Nonjurors.** Name given to a number of clergymen of the Church of England who refused to take the oath of allegiance to William and Mary in 1689. Their contention was that they had already taken the oath to James II and could not transfer their allegiance to another sovereign at the bidding of parliament. In 1690 they were deprived of their livings.

The nonjurors included William Sancroft, archbishop of Canterbury, Thomas Ken, and several bishops, as well as the scholars William Sherlock and Jeremy Collier. Later they were joined by William Law. There were also a few laymen, Henry Dodwell and Henry Hyde, earl of Clarendon, among them. Altogether they numbered about 400. When deprived they held services of their own, and kept up an episcopal succession, but gradually died out. See Divine Right; Jacobites.

**Nonpareil** (*Passerina ciris*). Cage bird, also known as the painted bunting. It is a summer migrant of the S. United States, which winters in Central America. The hen is green above and yellow below, but two-year-old cocks have the head, neck, and upper part of the wings a bright blue, a yellow back shading into green behind, whilst the underparts and the rump are bright scarlet.

**Nonpareil.** Name of printing type. Half the size of pica, it is one size smaller than minion, and one size larger than pearl or agate, and is also called 6-point. Twelve lines make an inch.

**Nonsuch.** Name given by Henry VIII to a palace which he built between Cheam and Ewell, Surrey. Begun in 1538 and nearly completed in 1547, it was sold by Mary to the earl of Arundel, who finished it, but Elizabeth bought

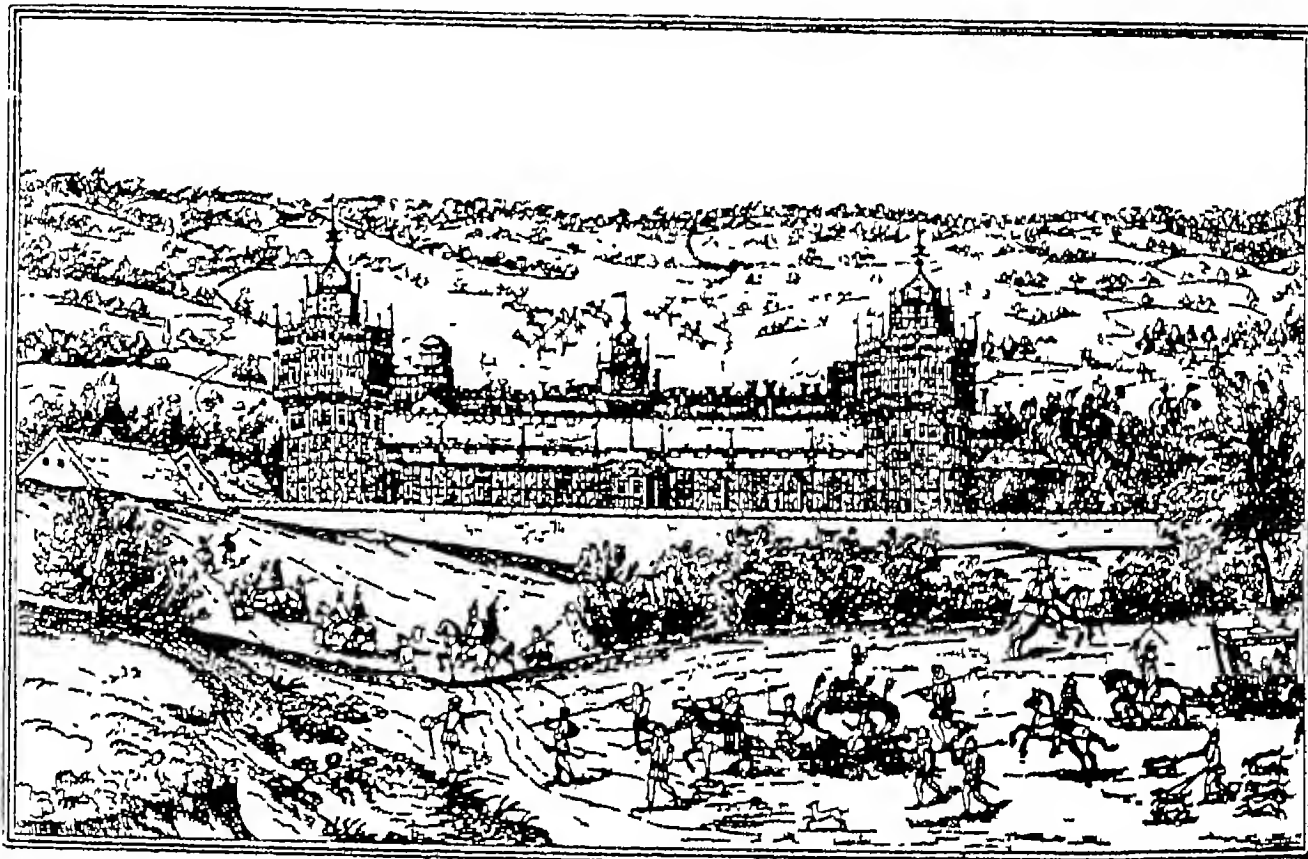
it back and in her time and that of the first three Stuarts it was a royal residence. Charles II gave it to the duchess of Cleveland, who sold it, and it was pulled down about 1680. Nothing of the palace remains.

On Old London Bridge was a remarkable structure called Nonsuch or Nonesuch House. It stood on the 7th and 8th arches from the Southwark end, was constructed entirely of wood, and is said to have been brought over from Holland piece by piece, and to have been put together by dovetailing and pegs without the use of a single metal nail. Built about 1580, it was taken down about 1757. See London Bridge.

**Noodles** (Fr. *nouilles*). Rich form of macaroni made of flour, eggs, and butter, rolled thin, and, three or four layers being superimposed, cut very fine and separated.

**Noon.** Twelve o'clock, the time at which the sun reaches its maximum altitude during the day. Two kinds may be distinguished: apparent noon occurs when the true sun crosses the observer's meridian; mean noon is similarly related to the fictitious mean sun (see Equation of Time). They are respectively the noons given by a sundial and by a clock, and may differ by as much as 16 mins. Civil or legal noon will differ from local noon at a place as the latter's longitude differs from that of the standard meridian. Thus local mean noon in Cornwall occurs at about 12.20 p.m. G.M.T.

**Noon, (Sir) FIBOZKHAN** (b. 1893). Indian lawyer and politician. Born at Lahore May 7, 1893, he was educated at Chiefs College there and Wadham College, Oxford. Advocate of the Lahore high court from 1917, in 1920 he was



Nonsuch. The Surrey palace built by Henry VIII. From a print of 1582

elected to the Punjab legislative council, and in 1927 became minister for local self-government in the prov., and minister for education, 1931-36. He was high commissioner for India in the U.K., 1936-41, defence member of the viceroy's executive council for India, 1942-45, Indian representative in the British war cabinet, 1944-45, and Indian delegate to the San Francisco conference (*q.v.*). In Sept., 1945, he resigned his post as defence member to return to politics as a member of the Muslim League (*q.v.*). Sir Firoz Khan, who had been knighted in 1933, renounced his titles and honours in 1946 as a protest when it seemed possible that Pakistan would not be created on the transfer of power in India. He became gov. of E. Bengal, 1950. He published *Canada and India*, 1939; *Wisdom from Fools*, 1940; *Scented Dust*, 1941.

**Nootka.** Group of American Indian tribes on the W. coast of Vancouver Island, British Columbia. Numbering a few hundreds, they form—with the Kwakiutl—the Wakashan stock, and are allied to the Makah of the adjacent Washington coast. Their economy was based on fishing, and the system of competitive ranking and obligatory feasts (*see* potlatch) stimulated the intensive exploitation of their environment and the elaboration of arts and crafts, notably their wood decoration.

**Nootka Sound.** Fiord on the W. coast of Vancouver Island, British Columbia, Canada. It is 6 m. wide, with a minimum depth of 250 ft. Three arms stretch inland, 7, 14, and 18 m. respectively. Nootka Island lies W. of the sound, with Esperanza Inlet N. of it. Nootka settlement, on the S. point, was founded in the 18th century by English merchants who traded with China. In 1789-90 three of their ships were seized by Spaniards. The British government protested; Spain claimed Nootka. The dispute was eventually settled by a treaty signed Oct. 28, 1790, by which Spain surrendered its claims.

**Nō Plays.** Japanese dramatic entertainment. One of the oldest and most elementary forms of Japanese drama, these plays rely much on the visual aids of pantomimic gesture and traditional costume. As originally conceived, they were short lyrical episodes, staged by small private companies travelling from house to house. The characters seldom exceeded five, and the scenery, though highly decorative, was reduced to a minimum. Later

the cast was augmented by a chorus, orchestra, and dancers. There are 250 plays in the repertory of the Nō drama, divided into five classes: (1) the *waki-nō*, dealing with Buddhist deities; (2) the *shara-nono*, with the ghosts of departed warriors; (3) the *kazura-nono*, noble ladies portraying the chief characters; (4) the *genzai-nono*, or modern drama of human appeal; (5) drama of demons and goblins. Okina, the sun-goddess, always appears in the prologue.

**Norbiton.** Ward of the bor. of Kingston-upon-Thames, Surrey, England. It has a rly. station 12 m. S.W. of London. St. Peter's is the chief church. Pop. (1951) 8,941.

**Norbury.** Residential district and ward of the bor. of Croydon, Surrey, England. It is 7 m. S. of London, and is connected with the metropolis by rly. and bus. Here were the links of North Surrey golf club. Pop. (1951) 15,972.

There is a Norbury in Derbyshire, 7 m. N.N.E. of Uttoxeter, on the Staffs border. It has an old church, S. Mary's, partly of the 14th century, with monuments to the Fitzherberts—remains of whose 14th-century hall may be seen—and is supposed to be the Norbourne of George Eliot's Adam Bede.

Norbury Park, with the Druid's Grove, is near Box Hill, Surrey.

**Nord.** Dept. of France, in the extreme N.E. Contiguous with the old French province of Flanders, it runs S.E. from the English Channel to the Ardennes, and has a "waist" only 5 m. wide. It has an area of 2,228 sq. m., and is watered by the Escaut (Scheldt), Scarpe, Lys, Sambre. The chief cities and towns, nearly all centres of manufacture, are Dunkirk, Hazebrouck, Lille (the capital), Douai, Valenciennes, Roubaix, and Cambrai. Its minerals include coal, iron, lead, and bitumen. In the S. half took place some of the fiercest fighting during 1914-18, and the B.E.F. fought here in 1940. Pop. (1954) 2,098,545.

**Nordau,** MAX SIMON (1849-1923). German-Hungarian author. A Jew by family, his real name Südfeld, he was born at Budapest, July 29, 1849, studied medicine, travelled widely, and having settled in Paris, practised from 1880 as a physician. Nordau's nov-



Max Nordau,  
German-Hungarian  
author

els and dramas were written to illustrate his social theories; among the novels being *The Drones Must Die*, 1898, and among the dramas, *The Right to Love*, 1894, and *Morganatic*, 1904. He is better known by analytical studies of contemporary society, *The Conventional Lies of Civilization*, 1884; *Paradoxes*, 1885, 1886; *The Malady of the Century*, 1887; *Degeneration*, 1892. The works named have been rendered into English. Nordau died Jan. 22, 1923.

**Nordenskiöld,** NILS ADOLF ERIK, BARON (1832-1901). Finnish-born Swedish explorer. Born Nov. 18, 1832, he studied mineralogy and mining at Helsingfors (Helsinki) university. He moved to Stockholm in 1857, and made valuable geological discoveries in Spitsbergen. For a time director of the royal museum at Stockholm, in 1861 and 1864 he made further expeditions there, and in 1868 he made a polar expedition, reaching 81° 42' N. He was the first to accomplish the N.E. passage in the Vega in 1878-79. He died Aug. 12, 1901. His works in English include *The Voyage of the Vega around Asia*, 1881; *The Second Swedish Expedition to Greenland*, 1885.



N. A. Nordenskiöld,  
Swedish explorer

His nephew, Nils Otto Gustaf Nordenskiöld (1869-1928), made a scientific exploration of the Magellan Straits and Patagonia, 1895-97, and of Alaska, 1898, and commanded the Swedish expedition of 1901-04 which discovered Oscar II Land.

**Nordenskiöld Sea.** Section of the Arctic Ocean, N. of Siberia, between the Taimyr peninsula and the New Siberia islands. It receives the waters of the Lena, Olenek, and Khatanga rivers, and was named after Nils Nordenskiöld, who navigated it in 1878.

**Norderney.** Island of W. Germany, one of the Frisian group. It is about 8 m. long and 1 m. wide, and is in the *Land* of Lower Saxony. It was used by the Germans as a seaplane base in the Second Great War and repeatedly bombed by the R.A.F. Norderney was occupied by the R.N. in May, 1945. Pop. (1950) 7,200. *See* Frisian Islands.

**Norddeutscher Lloyd.** German shipping company, one of the greatest in the world. Founded in



1857 at Bremen, it ran next year the first service from Germany to New York, with four steamers, won the blue riband in 1884, and started lines to S. America in 1875 and the Far East and Australia in 1886. By 1914 it had 117 ships with 710,000 tons. These were mostly lost in the First Great War or by confiscation for reparations. Reconstruction produced by 1930 187 vessels with 905,000 tons, including the Bremen and Europa. That year a 5 years' alliance was concluded with the Hamburg-America line, founded 1847. Seaworthy units were confiscated by the Allies after the Second Great War. See Bremen; Europa.

**Nordhausen.** Town of E. Germany in the *Land* of Saxony-Anhalt. It is situated in the fertile plain of the Goldene Aue. At one time a residence of the Emperors, it was a free city from 1253 to 1803, when it was absorbed into Prussia. It had remnants of the ancient fortifications. Industries have included engineering, chemical, tobacco, and textile manufactures. It also gave its name to Nordhausen, or fuming, sulphuric acid. During the Second Great War it was the site of a concentration camp. Captured April 11th, 1945, by the U.S. 1st army, after the war it was included in the Russian occupation zone. Pop. (pre-war), 37,000.

**Nordic.** Term used in a geographical and anthropological sense to describe the countries, people, and customs of the Scandinavian states of Sweden, Norway, Denmark, and Iceland. Nordics are fair and blue-eyed, and distinguished by their height and long heads; they are believed to have originally come from S. Russia. There is no Nordic race, but only a Nordic type, which makes up 70 p.c. of the Scandinavian population, 20 p.c. of Germans, Dutch, and British, and ten p.c. of the people of the U.S.A. The term Nordic is best known from a theory, developed in Germany, which became part of Hitler's philosophy.

The French Count Joseph de Gobineau (1816-1882) first propounded the fable of a Nordic race with superior courage and exceptional intellect. His theory was developed by the Germanised Englishman Houston Chamberlain and supported by Carlyle and Madison Grant. The Nordic race was supposed to have periodically come down into W. Europe from the N., and to have remained superior to the S. peoples in

courage, intelligence, and progressive thought.

In Germany the Nordic theory was enthusiastically supported; many Germans claimed that they themselves were Europe's purest Nordics. All great men in history, science, and art were considered to be Nordics. The civilization of ancient Greece was attributed to blond Nordics who conquered the country about 2,000 B.C., and the Indian, N. African, and Inca civilizations to the voyages of the Nordic Vikings.

Under Hitler the Nordic theory was carried to extreme lengths, and the Nazi faith claimed that it was the mission of German Nordics to govern other peoples. It became part of Nazi policy to select only Nordic types for official positions, and to encourage the breeding of Nordics by a system of marriage control among party members.

**Nordland.** Fylke or co. of Norway. It stretches for over 300 m., and has a breadth of less than 60 m. It includes in the N. the Lofoten Islands (*q.v.*), and the coast is fringed by islets, of which the chief group is the Vikten Islands in the S. The chief town is Bodö, on Salt Fjord. Area is 14,727 sq. m. Pop. 214,900.

**Nördlingen.** Town of Bavaria, Germany. It stands on the Eger, at a height of 1400 ft. 38 m. N.N.W. of Augsburg and 70 m. from Munich, and is an important rly. junction. It is one of the few remaining medieval towns, the walls of the ancient town still standing. Notable buildings include S. Saviour's church (1422), and a Gothic town hall (14th cent.).

Frederick II made it a free city of the Empire c. 1220, and during the 14th and 15th century it flourished as a member of the Saubian federation. During the Thirty Years' War it was the scene of two battles. In the first, 1634, the Swedish army, with its German auxiliaries, was routed by the Imperialists, and in the second, 1645, the French army of Turenne defeated the Imperialists. Nördlingen declined in importance and was incorporated in Bavaria. After May, 1945, it was in the U.S. occupation zone. Pop. est. 10,000.

**Nordstrand.** Island of Germany. It lies off the W. coast of Schleswig-Holstein, W. of Husum, with which it has steamer connexion. Its area is 20 sq. m.

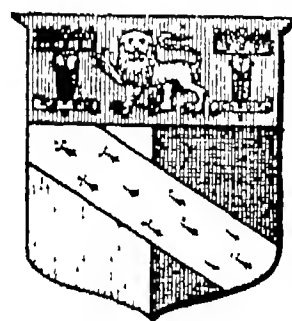
**Nord-Trøndelag.** Fylke or co. of Norway. It is centrally situated, with a small section of the Atlantic coast near the Vikten Islands.

Trondhjem Fjord extends almost half-way across the co. from the S.W.; Folden and Nansen Fjords are large indentations in the N.W. The rly. from Trondhjem reaches Stenkjaer. The chief town is Levanger. The area is 8,659 sq. m. Pop. 104,626.

**Nore, THE.** Sandbank in the Thames estuary, England. It is about 3 m. N.E. of Sheerness and 47 m. E. of London. At the E. extremity is the Nore lightship, anchored here since 1732. The Nore is generally regarded as marking the mouth of the Thames, and is an important anchorage. The naval mutiny at the Nore took place May 20 to June 13, 1797.

**Nore.** River of Ireland. Rising in the N. of co. Tipperary, it flows 70 m. S.E. through co. Leix and co. Kilkenny to the Barrow, which it enters 2 m. above New Ross. The Nore is tidal to Inistioge, 10 m. from its mouth.

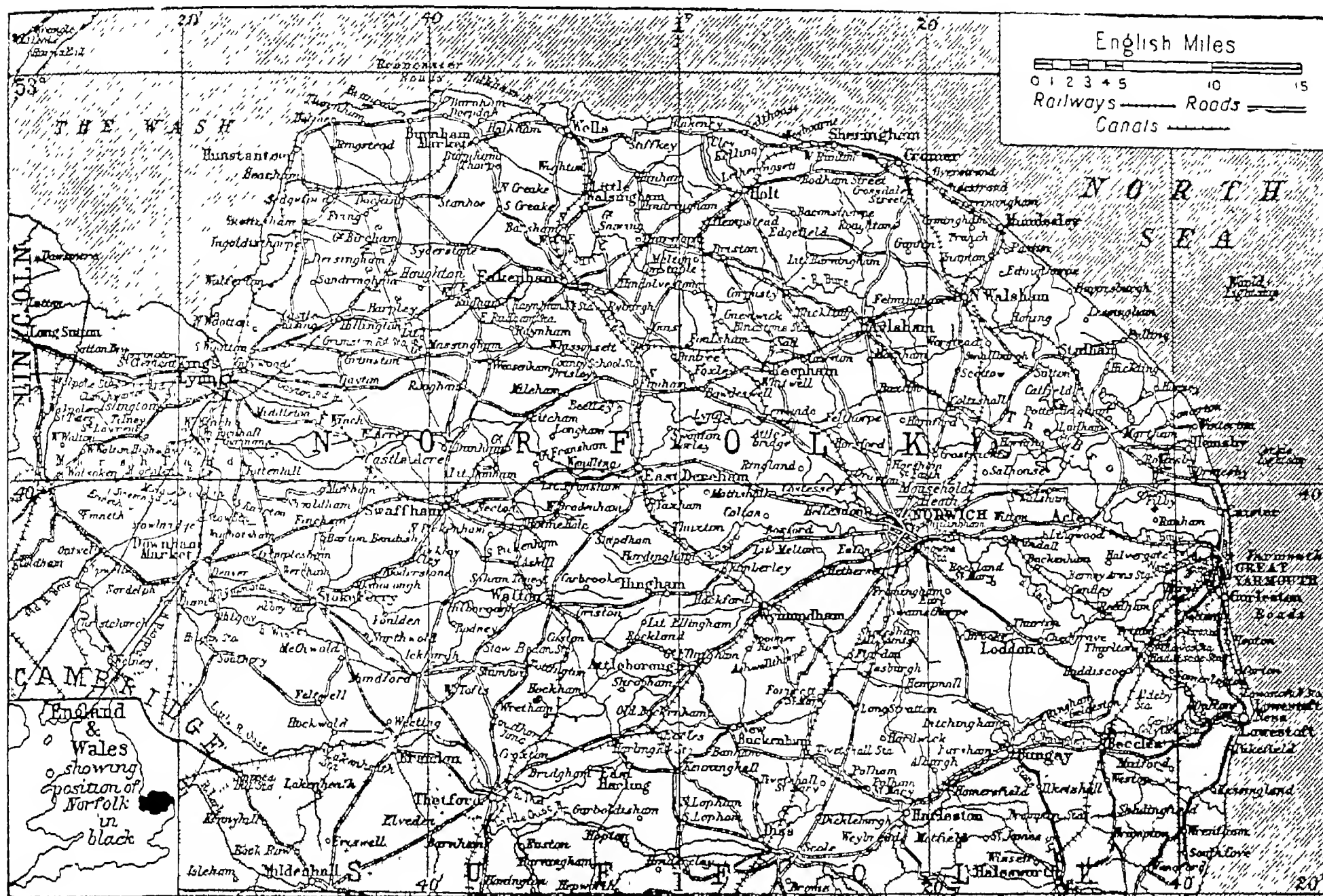
**Norfolk.** Eastern and maritime county of England, the fourth largest in the country. It has about



Norfolk arms

90 m. of coastline on the Wash and the North Sea, and an area of 2,054 sq. m. The surface in the interior is undulating or flat, the latter in the W., where the fen district enters the county, while along much of the coast it is quite low, and suffers in parts from the encroachments of the sea, as it does in the few places where cliffs fringe the shore. Along the Wash some land has been reclaimed. In the E. of the county are expanses of fresh water called the Norfolk Broads which are linked by the navigable rivers Ant, Bure, Thurne, Waveney, and Yare. The Great Ouse and its tributaries water the western part of the county.

Norfolk is a noted agricultural county. Wheat, barley, and oats are largely grown; cattle and sheep are reared; and some land is given up to fruit. In the south of the county the forestry commissioners have planted a large forest. Fishing is an important industry, while oil shales are worked near King's Lynn. Norwich is the county town and the largest place. Other corporate towns are Yarmouth, King's Lynn, and Thetford, smaller places being East Dereham, North Walsham, Downham Market and Wymondham. Cromer, Sheringham, Mundesley, and Hunstanton on the



Norfolk. Map of the maritime county of East Anglia, noted for agricultural produce and cattle-raising

Wash, are holiday resorts. The co., chiefly in the diocese of Norwich, forms six co. and two bor. constituencies. Pop. (1951) 548,069.

Norfolk was part of E. Anglia, and soon after 1066 became one of the richest parts of England; this was due mainly to its sheep farming. Wealth increased when in the 12th century Flemings introduced the worsted manufacture. Woollens were also manufactured, and Norwich became one of the three greatest cities of the kingdom. There are ruins of castles at Castle Acre and Castle Rising. In the county are Sandringham, Houghton, Holkham, Paston, and Nelson's birthplace, Burnham Thorpe.

**LITERARY ASSOCIATIONS.** The Babes in the Wood are supposed to have been left to die in Wayland Wood, between Watton and Wymondham; and The Bailiff's Daughter of Islington belonged to the hamlet of that name near King's Lynn. The Paston Letters, with their intimate revelations of 15th century life, may be recalled at Caister, near Yarmouth, and elsewhere. Dickens placed notable scenes of *David Copperfield* at Yarmouth. Borrow wrote of Norwich and other Norfolk places in *Lavengro*. R. H. Mottram, a native, gives a Norwich setting to many of his books. See *Broads*.

**Bibliography.** *Norfolk Broads and Rivers*, G. C. Davies, 1884; *History of Norfolk*, W. Rye, 1885; *Bygone Norfolk*, W. Andrews, 1898; *Victoria History, Norfolk*, ed. H. A. Doubleday and W. Page, 1901; *Norfolk*, R. H. Mottram, 1946.

**Norfolk.** City of Virginia, U.S.A. in Norfolk co. It stands on the Elizabeth river, an arm of Chesapeake Bay, 68 m. S.E. of Richmond, and is served by the Chesapeake and Ohio and other rlys., and by steamship lines. Transport facilities are also provided by two canals. A big port and the second largest city of the state, Norfolk has a spacious harbour. Its U.S. navy yard is one of the two largest American naval bases, occupying 453 acres. The city has many industrial establishments. In 1939 it was beautified by the planting of thousands of azalea trees. Pop. (1950) 213,513.

**Norfolk, EARL AND DUKE OF.** English titles, the latter being the senior dukedom in the peerage. After the Conquest of 1066 the earldom of Norfolk was held by several nobles, including members of the family of Bigod. It passed through female descent from the Bigods to the Mowbrays. In 1397 Thomas Mowbray was created duke of Norfolk, and except for a short period his descendants held the title until 1476, when John, the 4th duke, died without sons

John Mowbray's daughter Anne was married in 1478, when six years old, to Richard, younger son of Edward IV; and for two years that young prince (who died in the Tower, aged 10, in 1483) was duke of Norfolk. In 1483 John Howard (a descendant in the female line from Thomas Mowbray, 1st duke) was created duke of Norfolk by Richard III. In 1572 the 4th duke was attainted and the title lapsed until 1660, when Thomas Howard, earl of Arundel, a descendant of the attainted duke, was restored to the dukedom by parliament. Many of the earlier earls and dukes of Norfolk had filled the office of earl marshal, and in 1672 this was made hereditary in the family. Since 1842 the surname Fitzalan has been prefixed to Howard. The principal seat of this leading R.C. family is Arundel Castle, and an eldest son is called earl of Arundel or earl of Surrey. See *Arundel*; *Earl Marshal*; *Howard*.

**Norfolk, JOHN HOWARD, 1ST DUKE OF** (c. 1430–85). English soldier. A kinsman of the Mowbray family, dukes of Norfolk, he fought in the Guienne campaign, 1453, and became knight of the shire for Norfolk, and sheriff under Edward IV, 1461. He fought against the Lancastrians, and though created Baron Howard by Henry VI, 1470, he remained faith



ful to Edward, whom he accompanied to France, 1475, and acted as diplomatic representative, 1477-80. He was made duke of Norfolk and earl marshal by Richard III, 1483, and was killed at the battle of Bosworth. His title was attained by Henry VII, but a reversal was secured by his son Thomas, earl of Surrey, who became 2nd duke in 1514.

**Norfolk, THOMAS HOWARD, 3RD DUKE OF (1473-1554).** English soldier. Son of Thomas Howard, 2nd duke, he fought at Flodden, 1513, and became earl of Surrey on his father's restoration to the dukedom in 1514. He was lord-lieutenant of Ireland, 1520-21, raided the



Thomas Howard,  
3rd Duke of Norfolk  
After Holbein

French coast, became lord treasurer, 1522, and as warden of the marches raised the Scots' siege of Wark Castle, 1523. He cruelly suppressed the Pilgrimage of Grace (*q.v.*), 1537-38, and commanded the English army sent against the Scots in 1542. His influence, however, waned before that of Hertford, and he was imprisoned 1546-53, but released by Mary. His attainder was reversed, and he died at Kenninghall, Norfolk, Aug. 25, 1554. The poet Surrey (*q.v.*) was a son.

**Norfolk, THOMAS HOWARD, 4TH DUKE OF (1536-72).** English politician. Born March 10 1536, son of the poet Surrey, he was taught by John Foxe, and succeeded to the dukedom in 1554. He represented Elizabeth in the Scottish negotiations, 1559-60 and in 1568. For planning a marriage with Mary Queen of Scots he was imprisoned by Elizabeth, 1569-70. Released on a promise of allegiance and renunciation of the marriage scheme, he was drawn into the Ridolfi plot, arrested in Oct., 1571, and, denying that he was a Roman Catholic, was executed as a traitor, Jan. 2, 1572.

**Norfolk, HENRY FITZALAN-HOWARD, 15TH DUKE OF (1847-1917).** British politician. Born Dec. 27, 1847, son of Henry Granville, 14th duke (1815-60), he was

educated at the Oratory school, Edgbaston. He was envoy for Victoria at the jubilee of Leo XIII,



Henry Fitzalan-Howard,  
15th Duke of Norfolk  
Russell

1887, and was postmaster-general, 1895-1900. Elected mayor of Sheffield in 1895, he was first chancellor of its university, and sat on the L.C.C., 1892-95. Active in all matters pertaining to the R.C. Church in Great Britain, he took part as earl marshal in the coronation ceremonies of Edward VII and George V, was lord-lieutenant of Sussex from 1905, and died Feb. 11, 1917.

**Norfolk, BERNARD MARMA-DUKE FITZALAN-HOWARD, 16TH DUKE OF (b. 1908).** British peer. Son of the 15th duke, whom he was to succeed in 1917 as earl marshal, hereditary marshal, and chief butler of England, he was born May 30, 1908. As premier duke he played a leading part at the coronation of George VI and of Elizabeth II. Mayor of Arundel, 1935-36, he was joint parliamentary sec. to the ministry of agriculture, 1941-45. He married in 1937 Lavinia Strutt, daughter of Lord Belper.



Bernard Fitzalan-Howard,  
16th Duke of Norfolk

**Norfolk Island.** Islet in the Pacific within the territory of the Commonwealth of Australia. It is 5 m. long, 3 m. wide, and covers 13 sq. m. Discovered by Capt. Cook in 1774, it is 400 m. N.W. of New Zealand and 930 m. N.E. of Sydney. The climate is mild, the temperature averaging 68° F. with a range of 35° F.; the rainfall is 55 ins. annually. Bananas, lemons, guavas, pineapples, and passion fruit are grown, coffee is cultivated, and whaling is carried on. In 1856 descendants of the mutineers of the Bounty were removed here from Pitcairn Island. Norfolk I. was handed to Australia in 1914. Pop. (est. 1950) 1,140.

**Norfolk Regiment, ROYAL.** Regiment of the British army. Raised in Gloucestershire in 1685 by Henry Cornwall, a captain in the Royal Horse Guards, for the suppression of the Monmouth rebellion, it came on to the estab-

lishment as the 9th (East Norfolk) Foot. It first saw active service under Marlborough in 1701. At the battle of Almansa, 1707, it covered the British withdrawal, its gallant conduct earning it the figure of Britannia as the regimental badge. The 9th Foot won its first battle honour, Havannah, in 1762 and added Martinique in 1794. It fought under Wellington in the Peninsula where, its badge being mistaken for a figure of the Virgin Mary, it derived its nickname of "The Holy Boys." The regiment provided the funeral party for Moore at Corunna, a fact commemorated by the black thread twined with the gold lace on full-dress tunics.

Thereafter the regiment served many years in India. It was in the Afghan War of 1842, the Sikh War, served throughout the Crimean War, and having returned to India, marched in 1879 with Roberts from Kabul to Kandahar. Its next active service was in the Burmese War of 1889. In the Boer War as part of the 7th division it was at the victory of Paardeburg. Twenty battalions were raised in the First Great War and earned the honours: Mons; Le Cateau; Marne, 1914; Ypres, 1914, '15, '17, '18; Somme, 1916 '18; Hindenburg Line; Suvla; Gaza; Shaiba; Kut-el-Amara. Moving to France with the B.E.F. in 1939, the Norfolks earned the first decorations awarded for gallantry, in the field in the Second Great War. Other battalions served in the Burma campaign, winning particular distinction at Kohima in 1944. In 1957 the Norfolk Regiment was amalgamated with the Suffolk Regiment as part of the new East Anglian Brigade.

**Norham.** Village and parish of Northumberland, England, on the Tweed, 6 m. S.W. of Berwick-on-Tweed. Norham castle, one of the strongest defences of the English border, is mentioned in Marmion. Built by a bishop of Durham in the 12th century, it is now a ruin, the chief feature being the Norman keep. The district around is known as Norhamshire. Pop. (1951) parish, 639.

**Noric Alps** (anc. Alpes Noricae). Section of the E. Alps, between the valleys of the Mur and the Drave. The name was formerly applied to the whole area (Styria, Salzburg, Lower Austria, and part of Carinthia) included in the Roman prov. of Noricum. The highest peak is the Eisenhut, alt. 8,000 ft.

**Normalcy.** Term coined by Warren G. Harding, the Republican candidate, during his campaign for the U.S. presidency in 1920. In this election he promised, if he and his party were returned to office, a "return to normalcy"—by which he meant abandonment of involvement overseas (including any part in the newly created League of Nations) and concentration on U.S. affairs. Harding was elected by 16,152,200 votes against 9,147,353 polled by his Democrat rival James M. Cox.

**Normal School** OR **NORMAL COLLEGE.** Institution for the training of teachers for the work of education. The term normal school, which is a translation of the French *école normale*, is more commonly used in the U.S.A. than in Great Britain, where the usual name is training college.

**Normal Temperature and Pressure.** Conception in physics. Since the volume of a given mass of gas varies with the temperature and pressure, it is essential to define conditions of measurement when the density of the gas is quoted. It is usual to express this density as the value, termed normal density, which the gas would possess if the temperature and pressure were 0° C. and 76 cm. of mercury. These conditions are standard or normal temperature and pressure (S.T.P. or N.T.P.).

If  $V$  is the volume of gas measured at  $p$  cm. Hg pressure and  $t^\circ$  C., then the volume  $V_0$  occupied by the same mass of gas at N.T.P. is given by

$$\frac{pV}{273+t} = \frac{76 \times V_0}{273}, \text{ or}$$

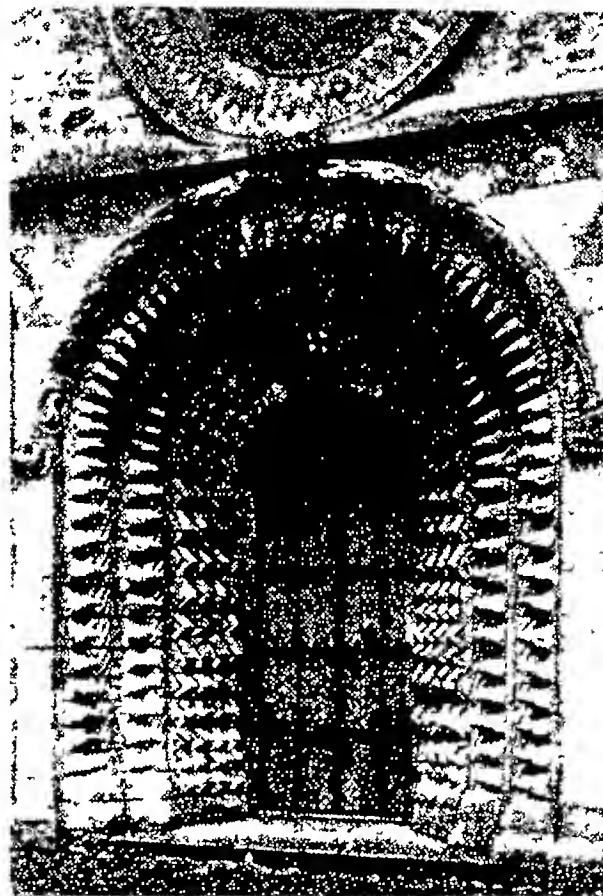
$$V_0 = \frac{pV}{76} \times \frac{273}{273+t} \text{ c.c.,}$$

if  $V$  is expressed in c.c. Hence, to calculate the mass of a given volume of gas under particular conditions, it is necessary to reduce the volume to N.T.P. by the above formula, and then multiply by the density at N.T.P.

**Norman** (Fr. *normand*). Name given to the people of Normandy and their descendants in countries which were conquered by them. The word Norman is identical with Northman, but is generally restricted to the mixed people which arose after the conversion of the heathen settlers and their adoption of French culture. This people displayed extraordinary energy and love of adventure: military, legal, and organizing powers; and great adaptability. Itself the product of one of the

latest of the great European migrations, it spread Latin order and discipline through many regions, posed as the champion of the papacy, and initiated the movement which culminated in the Crusades. The conquest of England was followed by the permeation of the Scottish Lowlands by Norman chivalry, while S. Wales and the Irish Pale were being conquered.

About 1017 Norman adventurers intervened in the struggles in S. Italy between Greeks and Muslims, and by craft and force established a dominion under Robert Guiscard, who became duke of Apulia and Calabria in 1059. His nine brothers aided in the conquest, Roger I overthrowing the Arabs of Sicily, 1060-91. Roger II, crowned king of Sicily



in 1130, united the Norman possessions on the mainland, including Naples, with his own, and conquered Corfu and Mahedia in N. Africa. William II conquered Epirus and sacked Salonica, 1185. The Norman dynasty died out in 1194, having established one of the best organized kingdoms in Europe.

**Norman, MONTAGU COLLET NORMAN, BARON** (1871-1950). British banker. Born in London, Sept. 6, 1871, he was educated at Eton and King's College, Cambridge, and served in the S. African War. A director of the Bank of England from 1917, he was made deputy governor

in 1918, and governor in 1920, holding the post until his retirement in 1944. He had a large

share in framing and guiding the financial policy of Great Britain; he advised a return to the gold standard in 1925, and after its abandonment in 1931 followed a policy of controlled inflation. His actions aroused criticism, but he never ceased to enjoy the confidence of the government, whatever its party. In 1923 he was made a privy councillor and on retirement he was given a peerage. He died Feb. 4, 1950.



Lord Norman,  
British banker

**Norman Architecture.** Name applied to a style of building in England and Normandy during the 11th and 12th centuries. It is said to have been introduced into England by Edward the Confessor, who built the choir and transepts of the old abbey of Westminster, but was not fully developed until after the Conquest. Historically, it is a local variety of Romanesque.

The main characteristics of Norman, as of Romanesque, architecture are the round arch and the plain round or rectangular column. Little is made of the base of a column; the bell capital (*q.v.*) is much the same as the Saxon in design and workmanship; vaults are of the barrel variety, roofs gen-

erally of the gabled variety. The Norman style is characterized by its massive, solid construction, with thick walls and small, round-arched windows. The use of the round arch is a defining feature, as is the absence of elaborate capitals and bases for columns.



Norman Architecture. The rounded arches and columns in St. John's chapel in the Tower of London. Top, the West door of Iffley church, near Oxford, a fine example of a Norman rounded arch and mouldings



erally of wood, and masonry thick-jointed and rough. In the reigns of William I and William II the principal building was the castle.

In the 12th century the style grew more ornamental. Heavy barrel vaults were groined; the angles of rectangular piers softened by recessed columns; doorways became more highly decorated, and enrichment more general in the direction of mouldings. The employment of the square and hatched billet, chevron, scallop, and other typical Norman ornaments was extended. Buttresses, at first wide and of slight projection, became much bolder. One of the best examples of a 12th century church in London is S. Bartholomew's, Smithfield. *See* Arch; Architecture; Castle; Door; Romanesque; *consult* Norman Architecture, E. G. Browne, 1907.

**Normanby.** Place in the N. Riding of Yorkshire, England. It lies 4 m. S.E. of Middlesbrough, in the urban district of Eston. A different Normanby, also in the N. Riding, is the village 5 m. S.W. of Pickering, from which the family of Phipps takes its title (*v.i.*).

**Normanby, MARQUESS OF.** British title borne since 1838 by the family of Phipps. In 1767, Constantine Phipps (1722-75), a grandson of Sir Constantine Phipps (1656-1723), lord chancellor of Ireland, was created an Irish baron, and in 1790 his son, Constantine John, was made an English one. On his death in 1792 the Irish title of Baron Mulgrave passed to his brother Henry (1755-1831), who was foreign secretary 1805, and first lord of the admiralty 1807. In 1812 he was made earl of Mulgrave. His son, Constantine Henry (1797-1863), 2nd earl, was made marquess of Normanby in 1838. George Augustus, 2nd marquess



1st Marquess of Normanby, British politician  
After H. P. Briggs, R.A.

(1819-90), was a Liberal M.P. and in turn governor of Nova Scotia, Queensland, New Zealand, and Victoria. In 1932 Oswald (b. 1912) became 4th marquess. An eldest son is called the earl of Mulgrave, from the family seat near Whitby.

**Normanby, CONSTANTINE HENRY PHIPPS, 1ST MARQUESS OF** (1797-1863). British politician. The son of Henry Phipps, 1st earl of Mulgrave, he was born May 15, 1797. Educated at Harrow and Trinity College, Cambridge, he

entered parliament in 1818. Earl of Mulgrave in 1831, in 1832 he became governor of Jamaica. In 1834 he was appointed lord privy seal, and during 1835-39 was lord-lieutenant of Ireland. He was home secretary under Melbourne, 1839-41; ambassador in Paris, 1846-52 and at Florence 1854-58. He died July 28, 1863. He wrote *A Year of Revolution* (1848), 1857.

**Norman Conquest.** Name given to the conquest of England by William I in 1066 and the succeeding years. It began with his victory at Hastings, and may be said to have ended with the march to Chester in 1070. Formerly it was regarded as introducing a completely new system into England, but the present view is that Norman influence, although considerable, was far from destroying all traces of English law and customs. *See* Armour; Bayeux Tapestry; England: History; Feudalism; William I. *Consult* The Norman Conquest, Freeman, 1867-79; Anglo-Saxon England, F. M. Stenton, 1943.

**Normandie.** French luxury liner. First put into service on the Havre-New York route in 1935, this 83,423-ton ship captured the blue riband of the Atlantic on her maiden voyage, breaking all records for passenger ships. At the outbreak of the Second Great War in 1939 the Normandie was lying in New York harbour; taken into protective custody, and seized in Dec., 1941, by U.S. coastguards, she was converted into an auxiliary ship and renamed the Lafayette. On Feb. 9, 1942, when 2,200 workmen were on board, a fire started on the promenade deck; the men made dramatic escapes, but many were injured. After burning for 13 hours the Normandie capsized, and was later disposed of for scrap.

**Normandy.** Old province of France. It was one of the largest of those into which France was divided before the Revolution, and takes its name from the Normans or Northmen. The name is still used to describe the district. Normandy lies along the English Channel between Picardy and Brittany, and on the S. touches Maine, and in the S.E. the Île de France. Its departments are Seine-Inférieure, Eure, Orne, Calvados, and Manche. Its capital is Rouen; Caen, Bayeux, Lisieux, and Évreux, much damaged during the Second Great War, were interesting Norman towns. For many years the Channel Islands belonged to the duchy, and it was owing to this connexion that they became English.

Having been included in the Roman and the Frankish empires, Normandy was ravaged by the Danes or Northmen, who found an easy way for their boats along the Seine. Some of them settled on its banks, and in 912 King Charles the Simple made a treaty with their leader, Rollo, to whom he gave some land around Rouen. Thus Rollo founded the duchy of Normandy, which grew in size under his successors. They assimilated the French language and culture, and were often at war with their neighbours, the counts of Anjou. William the Conqueror, who became duke in 1035, added Maine to his possessions. In 1066 he was crowned king of England, and when he died in 1087 he left Normandy to his eldest son Robert, thus separating it from England. In 1106, however, Robert was beaten at Tinchebrai and captured by his younger brother, Henry I, and the two countries were again united. After Henry's death in 1135, his grandson, Henry II, had to fight for Normandy as for England, but when he became king in 1154 he was already duke.

Normandy, although ruled by the English king, had the king of France as its overlord, and the relationship naturally led to trouble. Both Louis VII and Philip Augustus coveted the great possessions acquired by Henry II, but were unable to take any of them from him, although they helped his sons to harass his life. The warfare continued during the reign of Richard I, and came to a climax in that of John. In 1202 Philip Augustus invaded Normandy, and when Rouen surrendered to him in 1204, it was all in his possession. The duchy was formally surrendered by Henry III (1259).

After John had been deprived of Normandy the land was without a duke, but in 1329 Philip VI appointed his son John to that office. During the Hundred Years War the duchy was a battleground, and in 1359, after the English successes, the French king promised to cede it. This arrangement fell through, and after Agincourt the English overran it and established an administration. But the Normans steadily resisted, and gradually the duchy was recovered by France.

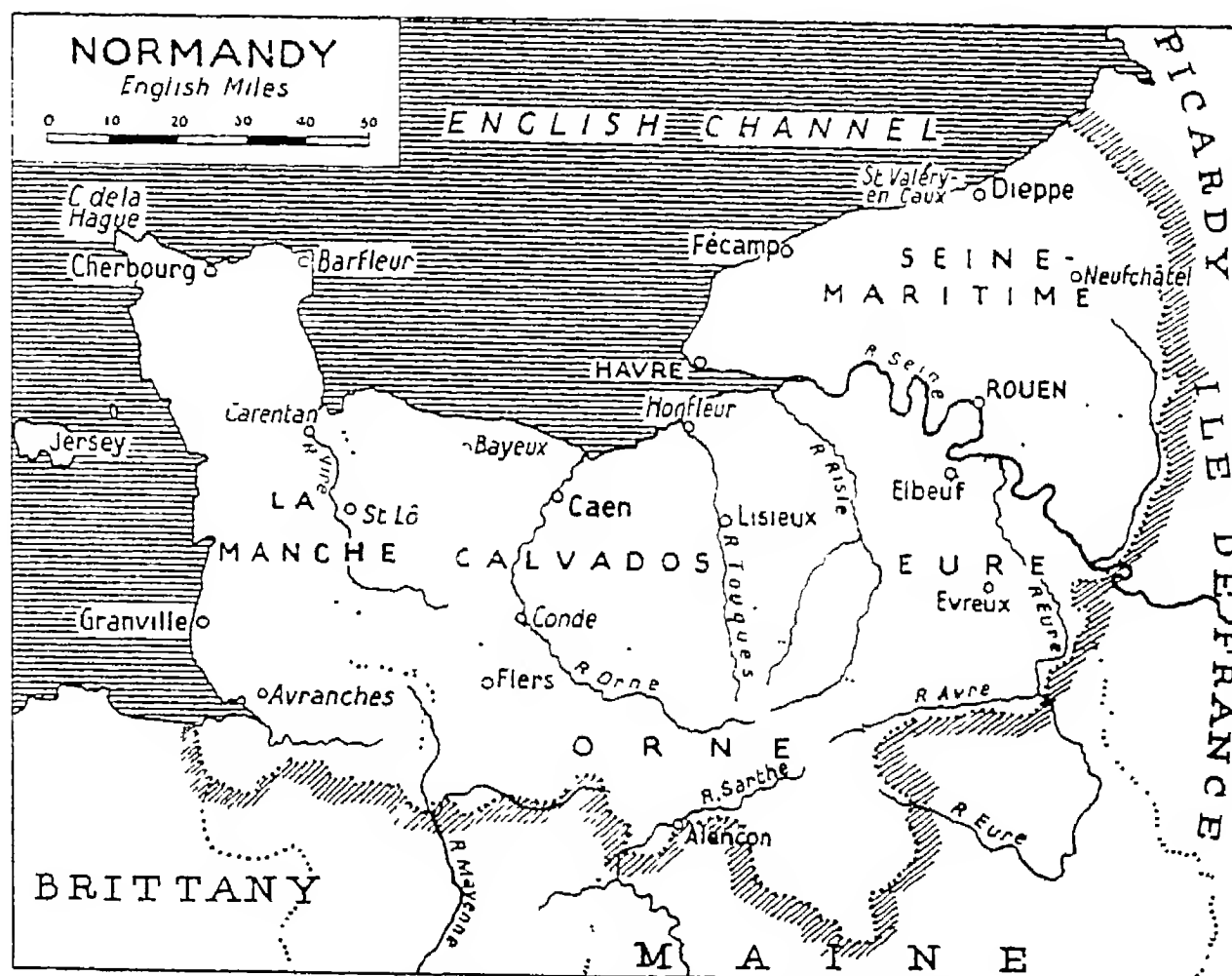
For many years Normandy had its own assembly of estates, and there was a *parlement* at Rouen from 1499 until the Revolution. Before that time, however, the land was completely at one with the rest of France. In 1791 it was

divided into departments. For the campaign in Normandy in 1944. *see* Caen; D-day; Europe, Liberation of Western; Falaise, etc. *See also* Channel Islands; Northmen; William I.

**Norman-French.** Dialect of Old French spoken in Normandy and England. The Scandinavian settlers in Normandy adopted the French tongue in the 10th century, and the dialect which thus arose contained many words of Danish origin, and many phonetic peculiarities. It played an important part in the development of Old French literature, and was the dialect of many of the *trouvères*, including, perhaps, the author of the original *Song of Roland*. The metrical chronicles of Wace are 12th-century monuments of Norman-French. Modern Norman speech preserves traces of the old dialect, especially in the Channel Islands, where an archaic form is used on ceremonial occasions.

Anglo-Norman is the name of the dialect spoken by the dominant class in England for about two centuries after the Conquest. It was spoken by a small and scattered minority, and is remarkable for its irregularity and its tendency to simplification. Its influence on English was much less than that of the Parisian-French which became current in official and noble circles in Henry III's reign, when Anglo-Norman was dying out.

**Norman Lockyer Observatory.** British observatory constructed in 1912 by Sir Norman Lockyer who began active work here in 1913 on his retirement from S. Kensington. It was called Hill



Normandy. Map of the pre-Revolution province of France, showing the departments into which it was divided in 1790

tion and temperature. In 1948 it became part of the University College of the S.W. of England (incorporated 1955 in the new University of Exeter).

**Normanton.** Urban dist. of the W. Riding of Yorkshire, England. It stands on the Calder, 10 m. S.E. of Leeds, and is an important rly. junction. The principal building is the church of All Saints, partly Perpendicular. There is a 16th-century grammar school. Industries include coalmining, and there are rly. workshops. Normanton gives its name to a co. constituency of Yorks. Pop. (1951) 19,087.

The same name occurs often in England. South Normanton is near Alfreton, in Derbyshire, also a coalmining centre. Another Normanton is near Derby, and there are places of this name in Rutland and Lincolnshire. Normanton-on-Soar and Normanton-on-Trent are villages in Notts.

**Normanton.** Town of Queensland, Australia, ranking as the chief

place on the Gulf of Carpentaria, though it is 50 m. from the mouth of the Norman river. There is steamer and air communication with Brisbane. Normanton is a port for mining and pastoral areas. Pop. (est.) 450.

**Norn.** In Scandinavian mythology, the name of the three god-

desses of fate. Of the race of the giants, they ended the golden age of the gods. They cast lots over every infant and laid gifts in his cradle. Sometimes they were considered as spinning and cutting the thread of life. One is malignant, the others are beneficent. They are akin to the Valkyries, the fairies, and the classical Parcae. Late literary myths represent them as Past, Present, and Future, and as daily watering the root of the world ash Yggdrasil from the well of Weird or Fate.

**Noronic.** Canadian passenger vessel, 6,905 tons, which operated on the Great Lakes. On Sept. 17, 1949, while lying at her pier at Toronto preparatory to sailing on a pleasure cruise, she caught fire; the wooden superstructure and two upper decks were destroyed, and 132 trapped below decks (out of 511 passengers and 179 crew) were killed—almost all those on board—most of the others having gone ashore for the evening.

**Norrbotten.** Län or co. of Sweden, the largest and northernmost co. It is bordered by Finland, Norway, and the Gulf of Bothnia, and includes part of Lapland. Timber from the extensive forests and iron from the mines of Gellivare are its principal products. Its numerous rivers and lakes are of great service in transporting the timber. Area 40,754 sq. m. Pop. (1950) 241,489.

**Norris, Sir John** (c. 1547–97). English soldier. Younger son of Henry, Lord Norris, and known as Black Norris, he served with the Huguenots in France, under Essex



Norman Lockyer Observatory, "Kensington" Dome (left) and "McClean" Dome, from the south

Observatory until renamed in his honour after his death in 1920. It occupies a site of  $7\frac{1}{2}$  acres on Salcombe Hill, about  $1\frac{1}{2}$  m. N.E. of Sidmouth, Devon, at a height of 565 ft. a.s.l. It is chiefly occupied in photographing the spectra of the stars and classifying them according to their chemical composi-



in Ireland, and in the Netherlands against Spain. After being lord president of Munster, he



Sir John Norris,  
English soldier  
After Zuccheio

returned to the Netherlands in 1585 at the head of an English army, was knighted by Leicester for relieving Grave in 1586, and fought at Zutphen. He was marshal of

the camp at Tilbury in 1588, ambassador to the Netherlands, and leader with Drake of an expedition to Spain. He died at Mallow, July 3, 1597.

Norris's father belonged to an old Berkshire family prominent at court in Tudor times. His brothers were famous soldiers, and their figures are on the Norris monument in S. Andrew's Chapel, Westminster Abbey.

**Norris, KATHLEEN** (b. 1880). American novelist. Born July 16, 1880, at San Francisco, her surname being Thompson, she spent her childhood in Mill Valley in the Californian mts., and became a librarian and then a journalist, marrying C. G. Norris in 1909. Her first novel, *Mother*, was published in 1911, and she achieved a best-seller with *Saturday's Child*, 1914. Of some 80 novels, her later ones included *Burned Fingers*, 1945; *Over at the Crowleys*, 1946.

**Norris Dam.** Storage dam across the Clinch river, Tennessee, U.S.A. Part of the T.V.A., it was completed in 1937. 1,860 ft. long, 265 ft. high, it controls the flood waters of the river, the overflow being used to generate electricity.

**Norristown.** Borough of Pennsylvania, U.S.A., the co. seat of Montgomery co. It stands on the Schuylkill, 18 m. N.W. of Philadelphia, and is served by rlys. and the Schuylkill canal. Industrial prosperity is based on granite and marble quarries and iron deposits. Norristown was founded in 1785 and, never incorporated as a city, is the most populous borough in the U.S.A.: pop. 38,181.

**Norrköping.** Town of Sweden, in the lan or co. of Östergötland. It stands at the head of the Bravik Fjord, an inlet of the Baltic, and is a junction 113 m. by rly. S.W. of Stockholm, with which it is also connected by steamer. It has a good harbour and ship-building yards, and trades in timber, granite, iron, and grain. The river Motåla affords power for

numerous factories. Norrköping, founded 1384, governed by a municipal council, is the fourth biggest place in Sweden. Pop. 85,000.

**Norroy and Ulster King of Arms.** Officer of the Herald's College, England. Norroy king of arms was first heard of in the reign of Edward II.; he had jurisdiction over England N. of the Trent. The office of Ulster king of arms was joined to that of Norroy in 1943.

**Norsabite.** Explosive of the non-nitroglycerine powder type. It is based on ammonium nitrate sensitised by T.N.T. Permitted for use in coal mines, it expedites drift cutting and ripping operations.

**Norse.** Adjective properly signifying Norwegian, the native form being Norsk, i.e. Nord-isk. It is applied usually to the older period of Norwegian history, including the age of the great migrations, often in a sense which includes the whole Scandinavian race. The Norse language, the old tongue of Norway, where it is now virtually extinct, was carried to Iceland, Greenland, the Orkneys, Shetlands, Hebrides, Isle of Man, and parts of the Scottish mainland, especially Caithness. It was ousted from Norway by Danish, and from Scotland by Gaelic and English, but lingered in the Orkneys and Shetlands until the 18th century.

Old Norse, one of the North Germanic group of languages, is the name given to the form of the language current before the 15th century, another name being Old Icelandic. While Iceland was the chief seat of Old Norse literature, some of the extant works were written in Norway, Greenland, and perhaps in the Hebrides. See *Iceland*; *Northmen*; *Norway*.

**North.** One of the cardinal points, one end of the earth's axis. The central point of the Arctic basin is the north terrestrial pole, directly above which the north celestial pole is marked approximately by the pole star. The north magnetic pole to which compasses point is more than 800 m. to the S. of the N. pole, somewhat N.W. of Boothia Peninsula, Canada.

**North, BARON.** English title borne since 1554 by the family of North. Sir Edward North was made a baron in 1554. His son Roger, the 2nd baron, was ambassador to France. Charles, the 5th baron, was made Baron Grey; but this title expired with his son, the 6th baron, in 1734. The 7th baron was a cousin, who was already Baron Guilford, and in 1752 was made earl of Guilford. The two titles were held together

until 1802, when the 3rd earl died. The barony then fell into abeyance, remaining so until 1841. It was then granted to Susan, daughter of the earl of Guilford. She and her husband, J. S. Doyle, took the name of North. The title again became extinct when the 13th baron, John Dudley, was lost with H.M.S. *Neptune*, as announced Jan. 3, 1942.

**North, LORD.** Name borne by Frederick North, 2nd earl of Guilford (1732-92) until he suc-



Lord North (2nd  
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ceeded his father, Francis, 1st earl of Guilford (1704-90). English politician. Born April 13, 1732, he was educated at Eton and Trinity College, Oxford. Entering parliament 1754, he was chancellor of the exchequer, 1767. Prime minister from 1770, he led the "King's Friends" who, though fiercely attacked, held office until 1782. His inept handling of the colonists led to the American War of Independence. In 1783 North formed a coalition with Fox, and held office April-Dec. He died Aug. 5, 1792. Consult *Life*, W. B. Pemberton, 1938; *George III, Lord North, and the People*, H. Butterfield, 1949.

**North, CHRISTOPHER.** Pen-name of John Wilson (q.v.).

**North, SIR DUDLEY** (1641-91). British economist. Son of Dudley, 4th baron North, he was born at Westminster, May 16, 1641, and educated at Bury St. Edmunds. He amassed a fortune in Turkey as treasurer of the Turkey Company. He returned to England in 1680, and became a well-known figure in London, being a sheriff of the City, and M.P. for Banbury. North was one of the earliest economists who advocated the doctrine of free trade. His *Discourses upon Trade*, published in 1691, foreshadowed the views of Locke and Adam Smith. He died, Dec. 31, 1691.

**North, SIR THOMAS** (c. 1535-c. 1601). An English translator. Younger son of Edward, Baron North, his fame rests almost entirely upon his translation of Plutarch's *Lives*, made from the French version of Amyot. The book was Shakespeare's chief source for Julius Caesar, Antony and Cleopatra, and other classical plays. North wrote in a vivid and powerful style, and was one of the makers of English prose.

## NORTH AFRICA CAMPAIGNS, 1940-43

Lt.-Gen. Sir Giffard Martel, K.C.B.

*The story of the fighting in North Africa during the Second Great War is here told from Gen. Graziani's advance into Egypt in Sept., 1940, until the surrender of the last Axis forces in Tunisia in May, 1943. See also Alamein; Eighth Army; Mareth Line; Montgomery; Tobruk; Tunisia, Battle of, etc.*

So long as Great Britain had France as an active ally her position in the Mediterranean was reasonably secure; but when France was defeated in June, 1940, Wavell, British c.-in-c. in the Middle East, found himself unsupported, and outnumbered by the strong forces Italy had built up in Libya, estimated when Italy declared war on June 10 at over 215,000 men, while the British in Egypt totalled 36,000 men, under Gen. Sir H. Maitland Wilson. The foremost defended position in Egypt was at Mersa Matruh, 120 m. from the frontier with Libya, on which a small covering force was placed with orders to attack Italian frontier posts immediately on the outbreak of war.

A number of patrol engagements were fought during the summer, but the Italian commander Gen. Graziani decided not to launch his offensive until the heat had abated. On Sept. 13, the Italians advanced across the border near the coast. British mobile troops withdrew before the Italians, who took Sidi Barrani, Sept. 16, and proceeded to construct a series of fortified camps from Maktila, some 12 m. E. of Sidi Barrani, through Tummar E. and W., about 10 m. S.E. and S. respectively of Sidi Barrani, and Nibeiwa, about 5 m. S. of Tummar. To protect their communications the Italians constructed a group of camps at Sofafi and El Rabia some 25 m. S. of the coast and the same distance S.W. of Nibeiwa. Wavell had decided not to offer strong opposition until they reached the prepared defences of Mersa Matruh; but two months went by without further enemy activity.

**WAVELL'S ADVANCE.** In the meantime Wavell had been making preparations. Small reinforcements were sent out to him, but on the other hand he had, after the Italian invasion of Greece, Oct. 28, to send forces to that country. However, in Nov. he decided that the time had come to assume the offensive, in spite of his great inferiority in strength. He considered the enemy's defensive arrangements to be "thoroughly faulty," with camps not mutually supported spread out over a wide area; and his plan was to attack

round the S. flank, capture the enemy camps at Nibeiwa and Tummar, and then push on towards Sidi Barrani and cut off the enemy while a small force attacked Maktila from the E. As this was a difficult operation Wavell decided to carry out a rehearsal in the back areas. Ground was marked out showing the positions of the camps and defences. His plan of attack was then gone through on Nov. 25 and 26 as an exercise complete with umpires. No one but the two divisional commanders had any idea that this was a rehearsal for their attack on the enemy. Certain mistakes came to light and were to be corrected in the "next exercise," i.e. the actual attack.

### Opposing Forces

For these operations the R.A.F. had two army cooperation squadrons, a squadron of Hurricanes and Lysanders for tactical reconnaissance, and a squadron of Gladiators for attacking opportunity targets. The Italians had a rather stronger air force. The British Western Desert force, commanded by Lt.-General Sir Richard O'Connor, consisted of the 7th armoured div., the 4th Indian div., and the 7th tank battalion; its total strength was 31,000 men, 120 guns, 225 tanks (mostly light), and 50 heavy infantry tanks (Matildas). The Italian force E. of the Egyptian frontier consisted of three Libyan divs., two Blackshirt and two Metropolitan divs., and an armoured group; total strength 80,000 men (63,000 Italians), 250 guns, and 120 tanks (mostly light).

The British approach, which began on the night of Dec. 7-8, was made in two night marches, the heavy infantry tanks starting two days earlier on account of their slowness. There was great danger that the movement would be seen from the air, but all went well. The approach on the last night was made in full moon and by the early hours of Dec. 9 the troops were in position. The guns opened at 7.15 a.m. The 7th tank battalion with the heavy infantry tanks advanced from the N.W. followed by infantry of the 11th brigade of the 4th Indian div. At 7.35 a.m. Matildas entered

Nibeiwa and met some enemy tanks which they destroyed with ease. As they advanced they came under heavy fire, but the Matilda was at that time the most heavily armoured tank in the world, and the enemy anti-tank shells bounced off the armour. By 8.30 a.m. Nibeiwa was in British hands. The commander of the 4th div. now turned to attack the camps at Tummar E. and W., both subdued by dark in much the same way and with few casualties. Seeing the success of these operations, he also sent the 16th infantry bde., in reserve, to move N. to cut off Sidi Barrani.

During this day the 7th armoured div. had sent the support group to pin the enemy at Sofafi and one of the two armoured brigades (the 4th) was sent N. to cut the road just W. of Sidi Barrani. They reached their objective; but the 16th infantry bde. came under rifle fire and was seriously delayed. On Dec. 10 the 11th infantry bde. came up on their flank with some infantry tanks. At 1.30 p.m. the commander 4th div. decided to attack Sidi Barrani. This was an ambitious plan in view of the great distances the troops had already moved, but they were highly trained and elated with their successes. The attack started at 4.15 p.m. and the town was captured before dark. Dec. 11 was spent in mopping up the battlefield. The Sidi Barrani area was soon cleared; and Brig. Selby's force dealt with the Italians round Maktila. The enemy was withdrawing in many places towards the frontier, and the 7th armoured div. was much occupied sending out forces to cut them off. By Dec. 15 all enemy troops had been driven out of Egypt, and the battle of Sidi Barrani was over.

### Italian Losses

The enemy forces, now concentrating in the area Bardia-Sollum-Capuzzo, consisted of four divs., with another at Tobruk. By Dec. 17 the greater part of them was behind the defences of Bardia, and the 7th armoured div. was already holding the exits to the W. Five enemy divisions had suffered heavy casualties or been broken up. Italian prisoners numbered 38,000, while British casualties were 133 killed, 387 wounded, and 8 missing.

The British supply system became increasingly difficult. The nearest railhead was at Mersa Matruh, and there was a shortage of mechanical transport. Gen.



British considerably; but the Italians among them were of doubtful fighting quality. In tanks the British had a small superiority in numbers, but the German tanks all had 50-mm. guns while the British still had only 3-prs. The German armoured forces were greatly superior in strength of personnel and weapons—particularly in anti-tank guns. It was a bold but correct action to assume the offensive.

#### British Advance into Libya

At dawn on Nov. 18 the 30th corps crossed the frontier near Maddalena, behind a screen formed by three armoured car regiments. The 7th armoured div. reached Gabr Saleh that evening, having covered 100 m. The 4th armoured bde., however, had been drawn away 25 m. to the E. in a protective rôle, and was already out of supporting distance of the div. The 1st S.A. div. was following in support of the 7th armoured div.

In preparation for the battle, British air forces had been fighting for air superiority, which they had gained to a large degree. As a result the advance came as a tactical surprise, and there was little interference from enemy air forces. On Nov. 19 the 30th corps was instructed to advance towards Tobruk. One brigade of the 7th armoured div., diverted to attack the Italians at Bir el Gobi, fought an indecisive action there. The remainder of 7th armoured div. advanced and seized Sidi Rezegh.

On Nov. 20 the German armoured forces debouched from the N. and a strong column was seen to be advancing on the 4th armoured bde., which was isolated. The bde. which had been fighting at Bir el Gobi was moved to reinforce the 4th armoured bde. A small action resulted; but next day the Germans diverted their forces to Sidi Rezegh, held by the British with one armoured bde., the S. Africans having not yet arrived. Lack of concentration at the decisive point found the British in a serious situation. On Nov. 22 all their forces were concentrating on Sidi Rezegh, but too late. The initiative had passed to the Germans who, on the 23rd, attacked Sidi Rezegh in very superior strength, and also the S. Africans, who had not yet reached the high ground. Fierce fighting occurred in which acts of great gallantry were performed by the armoured forces. German tanks broke into the lines of the S. African troops, who knocked many of them out at the muzzles

of their guns. But in the end the S. Africans were overrun, and the Germans were left in possession of the battlefield and of the high ground round Sidi Rezegh.

At this stage Rommel made a mistake. He was in considerable strength at Sidi Rezegh, with his 15th and 21st panzer divs. in hand. The British armoured forces were lying on the desert collecting themselves after their ordeal. The S. Africans were re-forming near Gabr Saleh. Rommel could undoubtedly have attacked and defeated the British armoured bdes. in detail before they could re-form and prepare themselves for battle. Instead, he chose to march straight through with both his armoured divs. and move on Shefferzen, just S. of Sidi Omar. This caused considerable confusion. Various headquarters had to scatter and clear out of his way, but the Germans made no attempt to mop up the troops. Heavily attacked from the air, at Shefferzen they met the 4th Indian div. There was nothing else between them and Cairo. Gen. Auchinleck came up to the front to restore confidence. The panzers attacked. The Indians held their ground. Fierce fighting ensued, and the Germans were repulsed with heavy losses.

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While these events were happening the 13th corps had been advancing round Sidi Omar. The N.Z. div. had been making for Sidi Rezegh to support the armoured forces. It did not arrive in time to do so, but when Rommel advanced with his panzer divs. the New Zealanders took Sidi Rezegh, Nov. 26, and next day met a party which made a sortie from Tobruk.

After his failure against the Indian div. Rommel ordered the 15th and 21st panzer divs. to return to their bases on the coast and refit. By this time the British armoured forces had recovered. Every available man, gun, and tank was used to pursue these defeated German forces as they withdrew; heavy casualties were inflicted. The Germans were now concentrating normal formations to attack Gen. Freyberg and his small force of New Zealanders at Sidi Rezegh. An attempt was made by the 30th corps to reinforce them with the S.A. div., but before they could arrive Sidi Rezegh was again lost.

Cunningham was replaced in command of the 8th army on Nov. 26 by Lt.-Gen. Ritchie, who added the 4th Indian div. to the 30th

corps and instructed it to retake Sidi Rezegh from the S. with the help of the armoured forces, now reinforced. About this time Rommel decided to pull out, in order to save the highly skilled personnel of his armoured forces. His withdrawal meant deserting the garrisons of Bardia, Sollum, and Halfaya, but these were for the most part Italians. He established strong rearguards on his S. flank which were overcome by the 30th corps, while the 13th corps followed up his retreating forces in the N. Tobruk was cleared on Dec. 7, Benghazi was recaptured Dec. 24, and the pursuit went on to Agheila near the Tripolitania border. Of the garrisons, that at Bardia fell on Jan. 2, 1942; Sollum was captured on Jan. 12, Halfaya on the 17th.

Rommel had saved fewer than 50 tanks out of his original 400. He lost 10,500 German and 26,000 Italian prisoners, and also some 24,000 dead and wounded. British casualties were c. 18,000.

ROMMEL'S SECOND ADVANCE. Driving the Axis powers out of Cyrenaica for a second time had again opened the way for an advance along the N. African coast. The rly. was extended to Tobruk with great speed. Administrative preparations were in hand. But events in another field again upset plans in N. Africa. Japan had attacked the U.S.A. at Pearl Harbour, and the whole situation in the Pacific was critical. Burma was threatened. Australia was in danger. Two Australian divs. and the 7th armoured bde. were sent to the Far East. Rommel meanwhile was being reinforced. In Jan., 1942, he advanced from Agheila. Benghazi was evacuated on the 29th and the British should have withdrawn farther; but they were anxious to retain airfields near Derna for the protection of Malta. In Feb., however, they were back to the Gazala-Bir Hacheim line. The 13th corps under Gott had the 1st and 2nd S.A. divs. and the 50th div. with the 1st army tank bde. and the 9th Indian infantry bde. Norrie had the 1st and 7th armoured divs. and some independent motor and infantry bdes., including the 1st Free French bde. at Bir Hacheim.

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against superior enemy forces, and had to withdraw at many points. At Bir Hacheim the Free French were holding their ground against heavy attacks, but immediately to their N. the Germans and Italians were making headway. In about the centre of the whole battlefield and just N. of the Capuzzo track there was a piece of ground which came to be called Knightsbridge. The 201st Guards bde. was well established at this place. Intense fighting was taking place to the S. of this locality and E. of Bir Hacheim, and this area was called the "cauldron." The 150th infantry bde. (50th div.), which was holding an isolated position in the forward area, was overwhelmed on June 1, and the enemy thus secured a salient in the British line. On the 4th-5th an assault was made on this salient, but repulsed: the full strength of the Germans in this area had not been appreciated. But the Gazala line still held, though the French at Bir Hacheim were isolated. On June 6 an armoured battle began round Knightsbridge, and enemy assaults on Bir Hacheim were renewed. On the 10th Ritchie ordered the French to evacuate Bir Hacheim, and the additional pressure then brought upon Knightsbridge forced the British to withdraw from there on the 14th. British armour in the Acroma area had been reduced to 30 cruiser and 20 infantry tanks, while the enemy probably had twice as many. The security of the British line had depended on a strong armoured backing, the loss of which made a withdrawal on the whole front inevitable.

#### Surrender of Tobruk

An attempt to hold a line Tobruk-El Adem southward failed, and Tobruk was again invested. Maj.-Gen. Klopper, commanding the 2nd S.A. div. since May 15, and appointed to command the fortress, was told to defend it at all costs. The enemy attacked on June 20, and next day Tobruk capitulated, some of the units fighting on, however, and a few succeeding in breaking out to re-join the 8th army. Rommel was able to take up the pursuit immediately. Auchinleck favoured an attempt to hold the frontier, but without armour Ritchie felt this could not be done, and his decision that he must withdraw on Mersa Matruh, where he proposed to fight a decisive battle while sending on H.Q. 30th corps to control the completion of the Alamein position, was endorsed by the Middle East defence committee.

However, Auchinleck, who took over control of the 8th army from Ritchie on June 25, abandoned the intention to fight at Mersa Matruh and withdrew the whole of the British forces to Alamein. There on Aug. 12 Auchinleck handed over command of the 8th army to Lt.-Gen. B. L. Montgomery; while on Aug. 15 Gen. Harold Alexander assumed command in the Middle East. On Aug. 10 Churchill, on his way to Moscow, met Alexander in Cairo. He gave him a directive: "Your prime and main duty will be to take or destroy at the earliest opportunity the German-Italian army commanded by Field Marshal Rommel together with all its supplies and establishments in Egypt and Libya."

ALEXANDER'S CAMPAIGN. Montgomery made himself familiar with the desert, and soon inspired all ranks of the "brave but baffled" 8th army with his own enthusiasm and confidence. At the beginning of Aug. it consisted of the 30th corps (now made up of the 9th Australian, 1st S.A., and 5th Indian divs., reinforced by the 23rd armoured bde. in an infantry support rôle) and 13th corps (2nd N.Z. div. of two bdes. and the 7th armoured div.). The line it held lay from Alamein (meaning the twin cairns), a halt on the desert rly. to Mersa Matruh, to the E. end of the Ruweisat ridge and then S. by W. over flat ground, interrupted by steep-sided depressions, of which Deir el Munassib was the chief, to the Qattara depression. Behind this part of the front lay the strongly defended Alam el Halfa ridge which, reaching a height of 430 ft. and commanding the country to the S., was held by an infantry bde.; a second bde. occupied reserve positions on Ruweisat ridge. For the defence of the Delta there were three armoured and three infantry divs., and of these Alexander brought forward on Aug. 15 the 44th infantry and the 10th armoured divs.

Axis forces in Egypt, under the nominal command of Mussolini, but the actual command of Rommel, were the German Afrika Korps (15th and 21st panzer divs.), the Italian 10th, 20th, and 21st corps.

On the night of Aug. 30 Rommel launched his offensive. A position on Ruweisat ridge was captured by parachute troops and lost again to the 5th Indian div. by dawn. A feint to the N. against the Australians failed. At 1 a.m. on Aug. 31 Rommel began a drive in the S. with his armoured forces. By a

ruse, a false map had been allowed to fall into the enemy's hands, and acting on it, as Gen. von Thoma (commander of the Afrika Korps, who was taken prisoner in Nov.) later admitted, Rommel did not bypass the British defences and drive N.E. on to Cairo, which was what he had been expected to do. Instead he launched a heavy attack upon them. They were well organized; and the German tanks now had to meet the fire of 6-pr. guns. They were severely defeated, and withdrew slowly and stubbornly until on Sept. 7 the battle was called off with Rommel's front slightly advanced in the S. to a line running from the E. end of Deir el Munassib to include the peak of Himeimat. During Sept. Rommel returned to Germany a sick man, and his place was taken by Gen. Stumme.

#### Montgomery's Preparations

Montgomery now prepared to assume the offensive. For this purpose 13th and 30th corps were to be used as infantry with some armour; a third corps, 10th, was to be an armoured *corps de chasse*, and to include 1st, 8th, and 10th armoured divs., and the N.Z. div. as motorised infantry. On Sept. 3, 300 Sherman tanks had arrived at Suez from the U.S.A. and 10th corps was assembled some 50 m. in the rear to undergo training and re-equipment, while the remaining troops from the Delta were brought forward to acclimatise them to the desert in which they would now have to fight. The R.N. and the R.A.F. raided the enemy's shipping, and sea and overland raids, troublesome to the enemy though abortive in effect, were made on Tobruk, Benghazi, and Barce.

The supply services that would be needed when the enemy was in flight were fully prepared; and elaborate measures were taken to conceal the actual plan of attack and lead the enemy to believe that its main feature would be an out-flanking movement in the S. instead of the intended direct attack in the N. The date selected as D-day was Oct. 23: full moon was on the 24th and good light was needed for the work the infantry had to do in clearing a passage through the enemy minefields for the armour. By this time also the Allies were about to assume a wider offensive. Invasion of the N. shore of Africa from the W. had been planned for Nov. 8, and it was considered that, if the attack at Alamein were made a fortnight ahead of that date, the enemy's forces in Egypt should by then



British considerably; but the Italians among them were of doubtful fighting quality. In tanks the British had a small superiority in numbers, but the German tanks all had 50-mm. guns while the British still had only 3-prs. The German armoured forces were greatly superior in strength of personnel and weapons—particularly in anti-tank guns. It was a bold but correct action to assume the offensive.

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#### Surrender of Tobruk

An attempt to hold a line Tobruk-El Adem southward failed, and Tobruk was again invested. Maj.-Gen. Klopper, commanding the 2nd S.A. div. since May 15, and appointed to command the fortress, was told to defend it at all costs. The enemy attacked on June 20, and next day Tobruk capitulated, some of the units fighting on, however, and a few succeeding in breaking out to re-join the 8th army. Rommel was able to take up the pursuit immediately. Auchinleck favoured an attempt to hold the frontier, but without armour Ritchie felt this could not be done, and his decision that he must withdraw on Mersa Matruh, where he proposed to fight a decisive battle while sending on H.Q. 30th corps to control the completion of the Alamein position, was endorsed by the Middle East defence committee.

However, Auchinleck, who took over control of the 8th army from Ritchie on June 25, abandoned the intention to fight at Mersa Matruh and withdrew the whole of the British forces to Alamein. There on Aug. 12 Auchinleck handed over command of the 8th army to Lt.-Gen. B. L. Montgomery; while on Aug. 15 Gen. Harold Alexander assumed command in the Middle East. On Aug. 10 Churchill, on his way to Moscow, met Alexander in Cairo. He gave him a directive: "Your prime and main duty will be to take or destroy at the earliest opportunity the German-Italian army commanded by Field Marshal Rommel together with all its supplies and establishments in Egypt and Libya."

ALEXANDER'S CAMPAIGN. Montgomery made himself familiar with the desert, and soon inspired all ranks of the "brave but baffled" 8th army with his own enthusiasm and confidence. At the beginning of Aug. it consisted of the 30th corps (now made up of the 9th Australian, 1st S.A., and 5th Indian divs., reinforced by the 23rd armoured bde. in an infantry support rôle) and 13th corps (2nd N.Z. div. of two bdes. and the 7th armoured div.). The line it held lay from Alamein (meaning the twin cairns), a halt on the desert rly. to Mersa Matruh, to the E. end of the Ruweisat ridge and then S. by W. over flat ground, interrupted by steep-sided depressions, of which Deir el Munassib was the chief, to the Qattara depression. Behind this part of the front lay the strongly defended Alam el Halfa ridge which, reaching a height of 430 ft. and commanding the country to the S., was held by an infantry bde.; a second bde. occupied reserve positions on Ruweisat ridge. For the defence of the Delta there were three armoured and three infantry divs., and of these Alexander brought forward on Aug. 15 the 44th infantry and the 10th armoured divs.

Axis forces in Egypt, under the nominal command of Mussolini, but the actual command of Rommel, were the German Afrika Korps (15th and 21st panzer divs.), the Italian 10th, 20th, and 21st corps.

On the night of Aug. 30 Rommel launched his offensive. A position on Ruweisat ridge was captured by parachute troops and lost again to the 5th Indian div. by dawn. A feint to the N. against the Australians failed. At 1 a.m. on Aug. 31 Rommel began a drive in the S. with his armoured forces. By a

ruse, a false map had been allowed to fall into the enemy's hands, and acting on it, as Gen. von Thoma (commander of the Afrika Korps, who was taken prisoner in Nov.) later admitted, Rommel did not bypass the British defences and drive N.E. on to Cairo, which was what he had been expected to do. Instead he launched a heavy attack upon them. They were well organized; and the German tanks now had to meet the fire of 6-pr. guns. They were severely defeated, and withdrew slowly and stubbornly until on Sept. 7 the battle was called off with Rommel's front slightly advanced in the S. to a line running from the E. end of Deir el Munassib to include the peak of Himeimat. During Sept. Rommel returned to Germany a sick man, and his place was taken by Gen. Stumme.

#### Montgomery's Preparations

Montgomery now prepared to assume the offensive. For this purpose 13th and 30th corps were to be used as infantry with some armour; a third corps, 10th, was to be an armoured *corps de chasse*, and to include 1st, 8th, and 10th armoured divs., and the N.Z. div. as motorised infantry. On Sept. 3, 300 Sherman tanks had arrived at Suez from the U.S.A. and 10th corps was assembled some 50 m. in the rear to undergo training and re-equipment, while the remaining troops from the Delta were brought forward to acclimatise them to the desert in which they would now have to fight. The R.N. and the R.A.F. raided the enemy's shipping, and sea and overland raids, troublesome to the enemy though abortive in effect, were made on Tobruk, Benghazi, and Barce.

The supply services that would be needed when the enemy was in flight were fully prepared; and elaborate measures were taken to conceal the actual plan of attack and lead the enemy to believe that its main feature would be an out-flanking movement in the S. instead of the intended direct attack in the N. The date selected as D-day was Oct. 23: full moon was on the 24th and good light was needed for the work the infantry had to do in clearing a passage through the enemy minefields for the armour. By this time also the Allies were about to assume a wider offensive. Invasion of the N. shore of Africa from the W. had been planned for Nov. 8, and it was considered that, if the attack at Alamein were made a fortnight ahead of that date, the enemy's forces in Egypt should by then



have been for the most part destroyed and he would have had insufficient time to bring in any significant reinforcements.

The Axis troops were spread fairly evenly along their whole front when nearly a thousand British guns opened up a 15-min barrage at 9.40 p.m. on Oct. 23. Twenty mins. later 13th and 30th corps advanced to the attack. 30th corps cleared two corridors through the enemy defences as planned, though somewhat behind schedule owing to the density of the mine-fields and the armoured brigades went through. The 13th corps to the S. was not so successful; but it was containing the southern group of enemy armour and was ordered by Montgomery not to press the attack, but to continue creating a diversion.

#### Rommel's Return

Stumme died of a heart attack on Oct. 23, and during a pause which Montgomery made for reorganization and regrouping on Oct. 26, Rommel arrived back. He endeavoured at once to carry out a manoeuvre he had often used successfully before—a mass tank attack in the afternoon out of the sun. But continuous bombardment by the R.A.F. and artillery fire disrupted his concentrations of armour. At 1.05 a.m. on Nov. 2 Montgomery launched a new attack, and at Tel el Aqqaqir occurred the biggest clash of armoured formations in the 11-day battle of Egypt. The British losses were heavy, but the enemy's losses were crippling. Then followed a German retreat and a British pursuit. Mersa Matruh, evacuated by the enemy, was re-entered on Nov. 8. At the same moment, the first Allied troops were coming ashore 2,000 m. to the W. in French N. Africa (*v.i.*).

The whole of Cyrenaica was in British hands by Nov. 25, and all the way the retreating enemy had been relentlessly attacked from the air, his fighters and his transport planes shot down. The next enemy position was at Agheila, the strongest in Libya. But by this time Rommel had under his command only some 25,000 Italians and 10,000 Germans, with 60-70 tanks; and the success of the Allies in establishing themselves in French N. Africa made it impossible to send him reinforcements from overseas.

Preparations to attack Agheila, Montgomery estimated, would take until Dec. 16. Heavy enemy demolitions and the effect of R.A.F. bombing were rapidly overcome:

by Dec. 1 the railhead had been brought forward to Tobruk, and 3,000 tons of Nile water were being delivered daily 25 m. W. of Mersa Matruh: the first ships entered Tobruk and Benghazi four days after their recapture, on Nov. 13 and 20. But Agheila is 175 m. from Benghazi and 300 m. from Tobruk, and motor transport remained a limiting factor.

When Dec. began, however, there were clear indications that the enemy meant to draw out. On Dec. 12 the N.Z. div. was sent off on a desert track to pass the enemy's landward flank and strike N. to cut the road at the Wadi Matratin some 60 m. W. of Agheila; and on that night the enemy began to withdraw, leaving mines, booby traps, and demolitions in such profusion that the troops making the frontal attack on the 14th took until the evening of the next day to cover the 30 m. from Mersa Brega to Agheila. Later on the 15th the N. Zealanders reached the wadi, but their difficulties in deploying by night in unknown country gave a large part of the enemy's rearguard still to the E. the chance to break up into small sections and race through breaks in the N.Z. deployment so that, despite losses, he got away the bulk of his forces. Pursuit continued, held up by demolished bridges and culverts over the numerous minestrewn wadis. There were skirmishes round Nofilia on Dec. 18 and 19, when the enemy began to retire on Buerat. The 15th panzer div., left to cover Sirte, withdrew when an armoured car regt. was sent forward to work round the S. of Sirte, taken without opposition on Christmas day. Similar outflanking movements by armoured car patrols forced the enemy back to Buerat by Dec. 30.

#### 8th Army's Dash for Tripoli

By this time the Axis had decided to evacuate Tripolitania and put all its forces into holding Tunisia; but Alexander was unaware of this, and it was decided that a two weeks' delay was necessary to bring up sufficient supplies, especially of petrol, from Benghazi, now 600 m. away, before the dash on Tripoli could be made, a delay during which Montgomery employed his Long Range Desert Group in reconnoitring in what was totally unknown country.

The attack began on Jan. 15, 1943: but the enemy was already moving W. and by the evening, in spite of some opposition, the 8th army had seized the main crossing of the Wadi Zem Zem. By the 19th

Rommel was standing on the line Homs-Tahuna, and in the evening of that day the 51st div. reached Homs. Again an outflanking armoured movement was made: it called off the enemy armour to the S.W. of Tahuna while a parachute bde. was moved to the Homs area, on which another British armoured bde. was moving. But the road W. of Homs winds for 35 m. through ravines and had been so thoroughly demolished that a rapid advance was impossible. Sharp rearguard actions had to be fought also. The outflanking column encountered stiff resistance; but at 5 a.m. on Jan. 23, three months exactly since the offensive opened 1,400 m. to the E., the 11th Hussars (the "desert rats") from the S., the 1st Gordons from the E., entered Tripoli. At 9 a.m. Montgomery received the formal surrender of the Italian authorities. The city had been little damaged, and the British military administration assumed the govt. of the city and prov. in an atmosphere of calm. By the end of the month, aided by a column of Fighting French under Gen. Leclerc which had invaded the country from the Chad territory, and conquered the Saharan prov. of the Fezzan between Jan. 4 and 29, Tripolitania was cleared.

**TUNISIAN CAMPAIGN.** The Allied expeditionary force which landed on Nov. 8, 1942, near Casablanca, at Oran, and at Algiers, was brought in two convoys, one from the U.S.A. and one from Great Britain, totalling some 500 transports and more than 350 escorting warships—at that time the largest armada ever assembled. Yet secrecy had been maintained down to the actual landing. The force was under U.S. command. Reports made after a secret landing in N. Africa from a British submarine by Maj.-Gen. Mark Clark (U.S. army) and six other British and U.S. officers had led to the belief that this would be less likely to lead to resistance by the Vichy French officials who controlled French N. Africa. The force which landed at Algiers, however, included a British bde. group which was to be the nucleus of the British 1st army.

The French army did oppose the landings; but on Nov. 10 Admiral Darlan, Vichy defence minister, who happened to be on a tour of inspection in N. Africa, agreed to an armistice and ordered all resistance to cease.

Gen. Eisenhower, the c.-in-c., decided to make a dash for Tunis, but by Nov. 10 already German troops were beginning to arrive in

Tunisia, at first by air, without resistance from the Vichy authorities; and after reaching Djedeida, only 12 m. from Tunis, on Nov. 28, the Allies were driven back by enemy tanks and dive bombers to Medjez el Bab (the ford of the pass). Axis forces were being reinforced much more rapidly than Allied, and with their S. flank at Sidi Bou Zid, the Allies now spent two months in consolidating the N. position and beating off German attempts to get round the S.

In accordance with decisions taken at a conference of the combined staffs with Churchill, Roosevelt, and Eisenhower held at Anfa near Casablanca on Jan. 14, and attended by Alexander, the 8th army came under Eisenhower's command when it entered Tunisia, and an army group H.Q. under Alexander's command (known as 18th army group—1st under Gen. Kenneth Anderson, 8th under Montgomery) was set up to co-ordinate the British, French, and U.S. forces in Tunisia. Alexander also became deputy commander of the Allied expeditionary force. At about the same time the Axis created "army group Africa," under Rommel, with the 5th panzer army commanded by Gen. von Arnim, and the 1st (Italian) army (German Afrika Korps, Italian 20th and 21st corps, which had been driven out of Libya) commanded by the Italian Gen. Messe.

Alexander assumed command in Tunisia on Feb. 19. At that time the battle of the Kasserine pass was raging in the S., but by the end of the month the pass, Sbeitla, Kasserine village, and Feriana had been reoccupied. In the last days of Feb. Rommel attacked in the N. towards Medjez el Bab, Béja, and the Jebel Ahmera ("Longstop Ridge"). He achieved some success; but all the thrusts were held. Eighth army meanwhile had occupied Medenine on Feb. 18, and by the 24th was in contact with outposts of the Mareth line. On March 6 Rommel attempted to recover Medenine. It was his last battle in Africa, and he lost it. About the 19th he handed over his command to Sixt von Armin, and returned to Germany. Then followed Montgomery's successful attack on the Mareth line, March 20–28, his capture of Gabes March 29, and the battle of the Wadi Akarit April 6, which forced Messe to retire to Enfidaville. On April 7 a U.S. patrol from a force which had advanced from Feriana to capture Gafsa on March 17 and El Guetar

on the 18th, met a British patrol of 8th army: the Allies had driven right across Africa.

By April 13 leading Allied troops were in touch with the enemy defences N. of Enfidaville, and the whole coastal plain was in Allied possession. As Alexander prepared for the final assault the enemy, some 250,000 strong, was now contained within a line running from the coast E. of Cape Serrat through Sidi Nsir, Medjez el Bab, due S. and then due E. to just N. of Enfidaville. By this time, the Allies had established complete air superiority. Eighth army attacked at 9.30 p.m. on April 19, capturing Enfidaville next day; this was the culmination of an 1,800 m. advance in six months, during which it had fought numerous and always successful battles.

On the night of April 20–21 the enemy made his last attack—between Medjez el Bab and Goubellat. It was a failure; and on the 22nd the 1st army attacked in its turn and slowly forced its way forward in heavy fighting. On May 7 British troops entered Tunis, U.S. troops Bizerta. Some thousands of the enemy retired into Cap Bon (*q.v.*) pen. in the hope of escaping by sea and air; after severe fighting during May 8–10 for the Hammam Lif defile they were rounded up. Mass unconditional surrenders began on the 12th. That day Sixt von Armin surrendered; next day Messe did. A quarter of a million men, more than half Germans, laid down their arms; 663 escaped. On May 13 Alexander sent a signal to Churchill, "Sir, it is my duty to report that the Tunisian campaign is over. All enemy resistance has ceased. We are masters of the North African shore."

**Northallerton.** Market town, urban dist., and capital of the N. Riding of Yorkshire, England, 30 m. N.N.W. of York. The chief building is the cruciform church of all Saints, mainly of the 12th century, with a fine Perpendicular tower. There are a hospital founded in the 15th century and a grammar school, while near are the remains of a Carthusian priory, Mount Grace (*q.v.*). The industries include tanning, brewing, malting, and engineering works; also the making of saddlery and other



Northallerton arms

leather goods. Standard Hill, 3 m. to the N., was the scene of the battle of the Standard (*q.v.*), 1138. Northallerton was the property, in the Middle Ages, of the bishops of Durham, and they held the manorial rights until 1865. They had a palace here, and there were at least two religious houses. Represented in parliament by two members until 1832, by one until 1885, it is within Richmond (Yorks) co. constituency. Market day, Wed. Pop. (1951) 6,087.

**Northam.** An urban dist. of Devon, England. The dist., which takes in Westward Ho, Appledore, and Orchard Hill, stands near the left bank of the Torridge, 1½ m. N. of Bideford. Pop. (1951) 6,470. Another Northam is in Hampshire, part of Southampton co. bor.

**North America.** The N. American continent, stretching from longitude 170° W. to 52½° W. and from latitude 80° N. to 15° N. It covers an area of approximately 8,350,000 sq. m. and has a pop. estimated at 163,000,000. Politically it is divided from E. to W. N. of 49° and the Great Lakes is (except for Alaska and Newfoundland) the dominion of Canada. Alaska is a dependency of the U.S.A., while the U.S.A. proper stretches from the 49th parallel to the borders of Mexico. The republic of Mexico, occupying the S. portion of the continent, extends from the boundary of the U.S.A. to Guatemala. For details of physical, geographical, and political features, see Alaska; America; Canada; Mexico; United States of America.

**Northampton.** County borough of Northamptonshire, England, also the county town. It stands on the left bank of the Nene, 66 m. N.N.W. of London, and is served by rly. The chief buildings in the borough are four parish churches: Northampton arms S. Peter's, a fine building, mainly Norman; S. Giles, varied in style and of somewhat later date; All Saints, rebuilt in Wren style after the fire of 1675; and the round church of S. Sepulchre, built by crusaders. There is a modern R.C. cathedral, by Pugin. S. John's hospital, founded 1137, is an interesting medieval building. The county hall dates from the 17th century; and the grammar school, which has 20th-century additions, from the 16th. The town hall is 19th-century Gothic, and the municipal buildings.





public baths, etc., are modern. The town has one of Europe's biggest market squares, and its public parks include the racecourse and Abington Park. It has a service of motor buses, two theatres, and several cinemas. The chief industry, from the 13th century, was long the making of boots and shoes; but light engineering has come to be of equal importance. Others include tanning, brewing, and iron founding.

Northampton began as an English settlement. After the Norman Conquest a castle was built here, and later the kings held parliaments therein. It was made a corporate town in the 12th century, and had two M.P.s until 1918, then one. It was made a co. bor. in 1888, and forms a bor. constituency. In 1675 much of the town was destroyed by fire. At Hardingstone, 1 m. S., is one of the Eleanor crosses, and near the town were several religious houses. Market days, Wed. and Sat. Pop. (1951) 104,429.

**Northampton.** City of Massachusetts, U.S.A., the co. seat of Hampshire co. It stands on the Connecticut R., 17 m. N.N.W. of Springfield, and is served by two rlys. Now a pleasant, cultivated New England town with wide streets, it was celebrated early in the 18th century as the home of Jonathan Edwards, the Puritan divine who led America's first religious revival. Smith College for women, opened 1875, had 2,276 students, and 254 teachers, in 1950. Pop. (1950) 29,063.

**Northampton, ASSIZE OF.** Body of instructions amounting in practice to laws, issued by Henry II and his advisers, at Northampton, in 1176. It was an expansion of the Assize of Clarendon (*q.v.*), and was in the form of directions to the judges about to go on circuit throughout England. The punishments to be inflicted on criminals were made more severe, and the powers of the sheriffs curtailed, while other articles dealt with questions of land tenure and dower.

**Northampton, BATTLE OF.** Fought July 10, 1460, during the Wars of the Roses. The Lancastrian host, with which was Henry VI, was encamped in a protected



Northampton. The Town Hall, built in 1864

position in some fields outside Northampton, when the Yorkists, under Warwick and the future Edward IV, who had just returned from exile, found and attacked it. The fight was soon over, for Lord Grey de Ruthyn turned traitor, and with his help the Yorkists got within the entrenchments of their foes, inferior in every way. The duke of Buckingham and about 300 other Lancastrians were slain.

**Northampton, EARL AND MARQUESS OF.** English titles borne by the family of Compton since 1618 and 1812. There was an earl of Northampton in the time of William the Conqueror, and later the earldom became hereditary in the family of Bohun, whose male line came to an end in 1373. In 1547 William Parr was made marquess of Northampton. A brother of Catherine Parr, he was made a baron in 1539, and was also earl of Essex and a leading man under Edward VI. A supporter of Lady Jane Grey, he was sentenced to death under Mary, but the sentence was not carried out, and he died Oct. 28, 1571.

The title of earl of Northampton was revived in 1604 for Henry Howard, on whose death in 1614 it became extinct. In 1618 William Compton was made earl. He was



Spencer Compton, 2nd Marquess of Northampton

the son of Sir Henry Compton, who was created Baron Compton and was lord president of the marches of Wales. From James, the 3rd earl (d. 1681), who fought for Charles I, the earldom passed to Charles, the 9th earl. In 1812 he was made a marquess and his descendant still holds the titles. Spencer, the 2nd marquess (1790-1851), was president of the Royal Society; William, the 5th marquess

(1851-1913), was a philanthropist and, before succeeding to the title, a Liberal M.P. During 1880-82 he was lord-lieutenant of Ireland. In 1913 the title descended to William Bingham Compton, the 6th marquess (b. Aug. 6, 1885). The family seats are Castle Ashby, Northampton, and Compton Wynyates (*q.v.*), Warwickshire. The marquess's eldest son is called Earl Compton.

**Northamptonshire.** County of England. An inland and eastern co., its area is 998 sq. m. The surface is undulating except in the soke of Peterborough, which is in the fen country. The highest point is Arbury Hill, near Daventry.

The principal rivers are the Welland, dividing the county from Leics., Rutland, and Lincolnshire, and the Nene. The Avon, Cherwell, Leam, and Ouse rise in the county, which has rly. service and is also served by the Grand Union canal.

Northampton is the co. town; other large places are Peterborough, Kettering, and Wellingborough. Higham Ferrers, Towcester, Daventry, and Brackley are smaller places of interest; there are a number of urban districts. The county has much fertile soil, wheat and barley being grown and cattle and sheep reared on a considerable scale. Boots and shoes are made in the towns and villages. It is famous as a hunting county.

Northamptonshire is divided administratively into two counties, each with a county council: one is Northampton proper; the other is the Soke of Peterborough. Together they form 4 co. and one bor. constituencies.

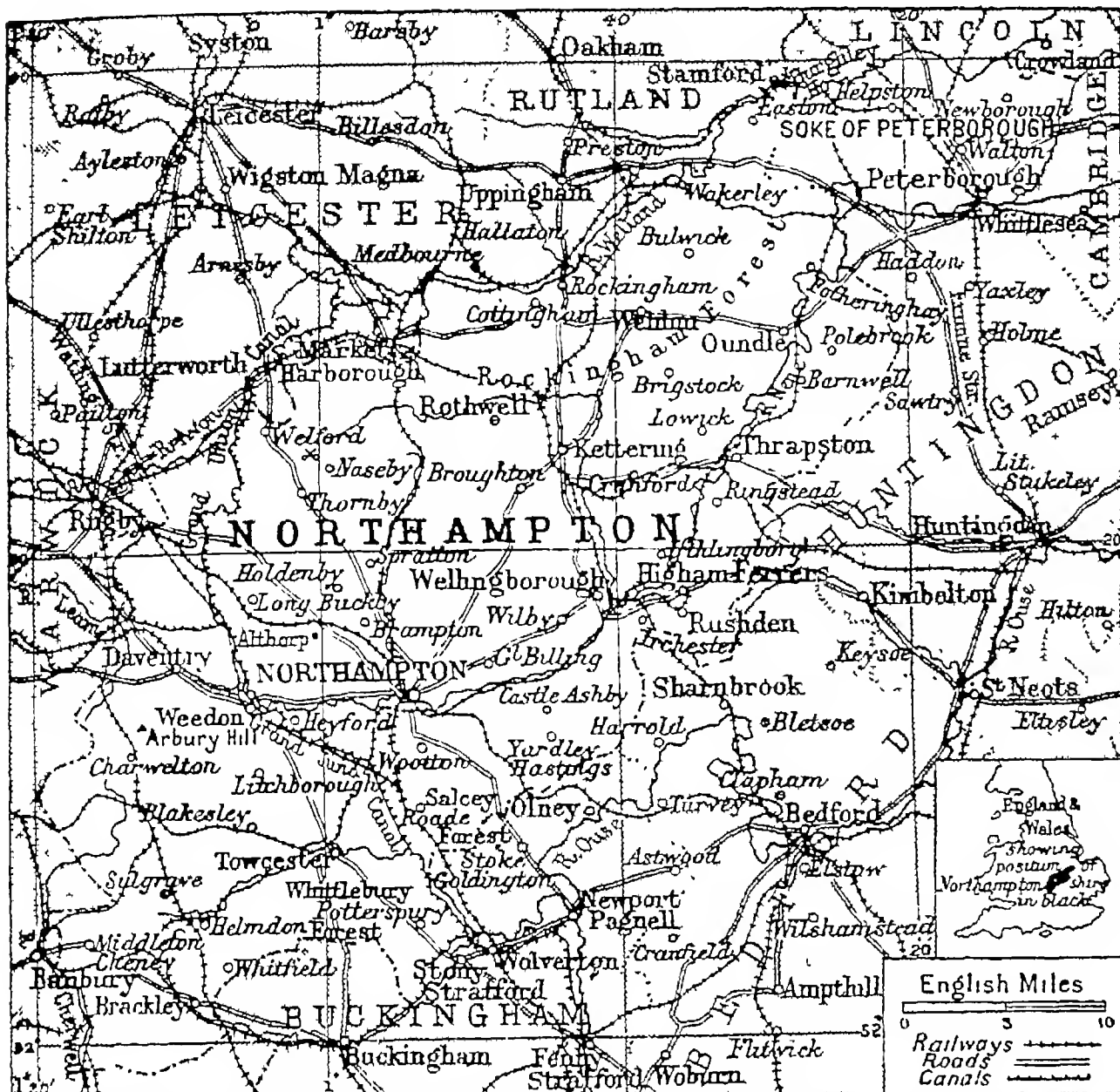
In addition to the cathedral at Peterborough the county has many fine churches, and contains Holdenby House, Burghley House, Althorp, Castle Ashby, Rockingham Castle, and Sulgrave Manor, ancestral home of the Washington family. There are remains of castles at Barnwell and Fotheringhay, earthworks at Arbury and elsewhere, Roman remains at Irchester, and monastic ruins at Irthlingborough and Higham Ferrers. There are remains of Rockingham, Whittlebury, and Salcey Forests. Pop. (1951) 359,690.

**LITERARY ASSOCIATIONS.** Thomas Fuller was born at Aldwinkle St. Peters and there received his early education; while at the neighbouring Aldwinkle All Saints was born John Dryden. A later poet was John Clare, the peasant-poet, born at Helpston. William Law was born at King's Cliffe, William Paley









Northamptonshire. Map of this eastern inland county of England, famous for the manufacture of boots and shoes

at Peterborough, James Hervey, the author of *Meditations among the Tombs*, at Hardingstone, and James Harrington at Upton. Rockingham Castle was partly described by Charles Dickens as the Chesney Wold of Bleak House.

**Bibliography.** History and Antiquities of N., J. Bridges, 1791; Antiquities of the co. of N., G. Baker, 1822; Victoria History of the Counties of England: Northamptonshire, ed. H. A. Doubleday, 1902; Rural N. under the Commonwealth, R. Lennard, 1916; Highways and Byways in N. and Rutland, H. A. Evans, 1918; Northamptonshire, W. Dry, 3rd ed. 1920; N. and the Soke of Peterborough, S. H. Beaver, ed. L. D. Stamp, 1943

**Northamptonshire Regiment.** Regiment of the British army. Raised in 1741 as the 48th Foot, it saw its first active service in Flanders in 1744, and earned distinction at Tournai and Fontenoy. The regiment was present at



Northamptonshire Regiment badge

1758, fought under Wolfe at Quebec in 1759, and for its share in the defence of Gibraltar, 1779-83, gained the castle and key on its badge; the sphinx on its colours commemorates its gallantry in Egypt in 1801. Eleven honours

were gained in the Peninsular campaigns. After taking part in the Maori war in New Zealand, it fought in the Crimea, and from 1879 to 1881 took part in the campaigns in S. Africa.

In 1881 the 58th Foot was incorporated into the 48th Foot and the regt. given its present designation. Like the 48th, the 58th, raised in 1750, saw its first active service in Canada in 1758, and then moved to the W. Indies, gaining the honours Martinique, 1762 and 1794. It spent many years in garrison in India, and in the S. African War won a V.C. at Laings Nek. Thirteen battalions were raised in the First Great War, and won honours in France and Belgium. In the Second Great War, battalions of the regt. fought in Burma, Italy, Madagascar, and Europe. The regimental depot is at Northampton.

**North Atlantic Treaty ORGANIZATION.** Body set up under the North Atlantic Treaty, a 20-year defensive alliance formed in 1949 at Washington, D.C., by the U.S.A., Canada, the U.K., France, Belgium, the Netherlands, Luxembourg, Norway, Denmark, Iceland

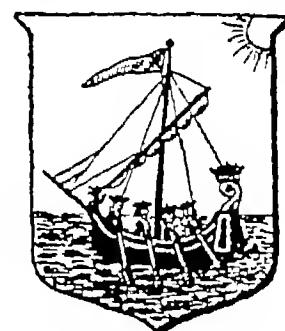
Italy, and Portugal. N.A.T.O. was headed by the foreign ministers of the 12 powers, with a permanent council of deputies; a defence committee of the 12 defence ministers, a military committee (chiefs of staff or their deputies), and regional planning groups.

In 1950 the council decided to create an integrated N.A.T.O. defence force, of which Dwight D. Eisenhower (q.v.) was first supreme commander, F. M. Montgomery was first deputy commander. Greece and Turkey were admitted as members in 1952, the German federal republic in 1955.

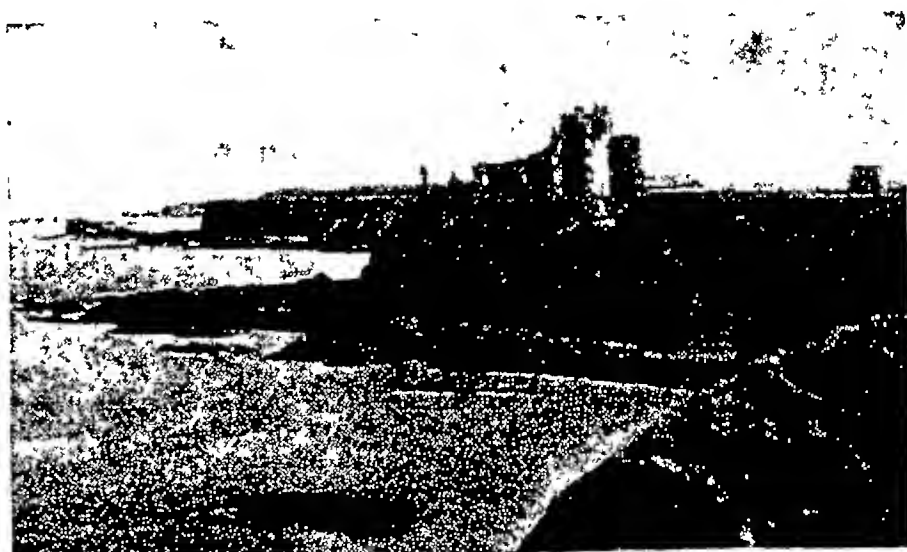
**North Battleford.** See Battleford

**North Berwick.** Royal burgh and holiday resort of East Lothian, Scotland, on the Firth of Forth,

23 m. E. of Edinburgh. It is famous for its golf courses. Near by are Berwick Law, a conical hill, 610 ft. high, the Bass Rock, Tantallon Castle, and Dirleton Castle. North Berwick was made a royal burgh about 1400. Pop. (1951) 4,001.



North Berwick arms



North Berwick, East Lothian. Ruins of Tantallon Castle, formerly a stronghold of the Douglas family

Frith

**Northbrook, THOMAS GEORGE BARING, 1ST EARL OF (1826-1904).** British politician. Born Jan. 22, 1826, he was the eldest son of Sir Francis Baring, who, in 1866, was created Baron Northbrook. Educated at Christ Church, Oxford, he entered parliament in 1857 as a Liberal for Penryn and Falmouth, and the same year was made a lord of the admiralty. In 1866 he succeeded to the peerage. Northbrook



Thomas Baring, 1st Earl of Northbrook  
Stereoscopic Co.



was under-secretary for war 1868-72, and during 1872-76 viceroy of India. In 1876 he was made an earl, and during 1880-85 he was first lord of the admiralty. In 1885 he parted from Gladstone, being opposed to Home Rule. He died Nov. 15, 1904. *See* Baring; *consult also* Memoir, B. Mallet, 1908.

**North Cape.** Promontory on Magerø Island, N. Norway. Generally accepted as the northernmost point of Europe, its lat. is  $71^{\circ} 10' 40''$  N. The most northerly continental point is Nordkyn. It reaches an elevation of 968 ft.

**North Carolina.** An Atlantic state of the U.S.A., one of the 13 original states of the Union. Its area of 52,712 sq. m. is a little more than that of England. The W. portion, traversed by the Appalachian system, contains many summits above 6,000 ft., a number of which are forest-clad; they are geologically the oldest mts. on the N. American continent. Mt. Mitchell, 6,711 ft., is the highest peak E. of the Mississippi. On the border of Tennessee is the Great Smoky Mt. park. In the centre the surface is undulating, and the coast region is low and often swampy.

The mainland is separated by Pamlico, Albemarle, and Currituck Sounds, and numerous lagoons and inlets form a chain of long and narrow sandy islands or beaches, which throw out three prominent capes, Fear, Lookout, and Hatteras; between these projections lie Onslow and Raleigh Bays. The principal rivers, all flowing to the E., are the Roanoke, Catawba, French Broad, Neuse, Cape Fear, and Great Pedee.

The state grows 70 p.c. of the valuable bright-leaf cigarette tobacco in the U.S.A. It ranks third for value of farm crops, producing cotton and cotton seed, maize, peanuts, sweet potatoes, and peaches. It is the nation's chief source of mica, feldspar, and residual kaolin clay. There are 200,000 acres of virgin hardwoods. Manufactures include cotton and knitted goods, lumber products, tar, resin, flour. Shad and oyster fisheries are important.

There are 17 institutions of higher learning, including the oldest state university in the U.S.A., at Chapel Hill (1795). Two senators and 12 representatives are returned to congress. Raleigh is the capital. Roanoke Island was the site of the first (unsuccessful) English colony in America, 1585. Pop. (1950) 4,061,929

**Northcliffe, ALFRED CHARLES WILLIAM HARMSWORTH, VISCOUNT** (1865-1922). British newspaper

proprietor and pioneer of modern journalism. He was born at Chapelizod, Dublin, July 15, 1865, eldest of seven sons of a barrister-at-law, and was educated at Hampstead. In 1881 he began to practise with success as a free-lance journalist, and at the age of 17



Lord Northcliffe,  
British newspaper  
proprietor

was appointed assistant editor of Youth. Moving to Coventry in 1885, he worked for Iliffe & Sons. In 1887, declining the offer of a partnership, he returned to London, where in 1888 he established the weekly journal Answers, forerunner of many other successful periodicals which developed into the gigantic business of The Amalgamated Press (*q.v.*). In 1894 he and his brother Harold, later Viscount Rothermere (*q.v.*), acquired the London Evening News. In the same year he financed the Jackson-Harmsworth Arctic expedition (*see* Arctic Exploration).

Probably the greatest step in his career was the founding of the Daily Mail (*q.v.*), the first number of which appeared May 4, 1896. The bold original lines on which this, the first halfpenny morning newspaper, was organized quickly revolutionised British journalism, over which Harmsworth's influence was vigorously felt during the rest of his life. In 1903 he founded the Daily Mirror, disposing of it to his brother in 1914.

Created a baronet 1904, Harmsworth received a barony the following year, becoming Lord Northcliffe. In 1908 he became chief proprietor of The Times. The "Northcliffe press," which now included the Weekly Dispatch and the Overseas Daily Mail, was the medium by which he constantly endeavoured to exert an influence over public affairs, especially in directing the thoughts of his readers to patriotic and imperial causes.

In the first year of the First Great War both The Times and the Daily Mail played a leading part in the controversy over the supply of munitions (*see* Munitions). Northcliffe was singled out by the German press for particular malignity as the incarnation of the British will to win, and a bronze "hate-medal" of him was struck in 1916. In 1917 he served as chairman of the British war mission in the

U.S.A., being made a viscount on his return. Declining the office of air minister, he became in Feb., 1918, director of propaganda in enemy countries, and his work in this capacity undoubtedly contributed greatly to the rapid collapse of Germany and Austria. In 1921 he undertook a world tour, but serious illness necessitated its curtailment, and he returned to London in 1922, dying there Aug. 14, 1922. He had no children, and the title became extinct.

He stood unsuccessfully for parliament in 1895 as a conservative candidate for Portsmouth. *Consult* Northcliffe, H. Fyfe, 1930; My Northcliffe Diary, T. Clarke, 1931; With Northcliffe in Fleet Street, Sir J. A. Hammerton, 1932.

**Northcliffe Glacier.** Huge ice mass on the coast of Queen Mary Land (*q.v.*), Antarctica, falling into Robinson Bay. It was discovered and named by Sir Douglas Mawson (*q.v.*), Dec. 25, 1912.

**Northcote, HENRY STAFFORD** NORTHCOTE, 1ST BARON (1846-1911). British administrator. Son of the first earl of Iddesleigh, he was born in London, Nov. 18, 1846, and educated at Eton and Merton College, Oxford. Secretary to his father, then chancellor of the exchequer, 1877-80, he was M.P. for Exeter, 1880-99. He was appointed governor of Bombay, 1899, and created a peer in 1900. During 1904-08 Northcote was gov.-gen. of the Commonwealth of Australia. He died Sept. 29, 1911.

**Northcote, JAMES** (1746-1831). British painter. Born at Plymouth, Oct. 22, 1746, he moved to London, where the help of Reynolds enabled him to study at the R.A. schools. He was elected A.R.A. in 1786, and R.A. in 1787; he published his Life of Sir Joshua



James Northcote,  
British painter

Reynolds in 1813, One Hundred Fables, illustrated by himself, in 1828, and A Life of Titian in 1830. He died in London, July 13, 1831.

**North Dakota.** North-central state of the U.S.A.; area, 70,655 sq. m. It is bounded N. by Canada, E. by Minnesota, S. by S. Dakota, W. by Montana. The geographical centre of N. America is in Pierce co., 50 m. W. of Devil's Lake. A Peace Garden of 3,000 acres on the border marks the long peace between the U.S.A. and Canada.



North Downs. The view from Reigate Hill, Surrey, looking westward along the chalk ridge  
Will F. Taylor

The surface is chiefly undulating prairie, relieved in the N. by the Turtle Mts. and S.W. by isolated "buttes." In the E. is the Coteau des Prairies, a plateau from 1,000 ft. to 2,000 ft. high, and between the Missouri and James rivers is the Coteau du Missouri from 2,000 ft. to 2,750 ft. high; W. of the Missouri intrude the Bad Lands, areas virtually devoid of vegetation, which are now accessible over all-weather highways. The Red River of the North, tracing the "Sioux state's" E. frontier with Minnesota, has a fertile valley forming part of the nation's N.W. granary. The state leads in the production of spring and durum wheat, rye, flax seed, oats, barley, and maize, and does much cattle rearing and dairy farming. In the W. are 32,000 sq. m. of lignite annually producing 2,000,000 tons. Chief educational centres include the university of N. Dakota Agricultural College, and Jamestown College. The capital is Bismarck. Settled c. 1800, it was part of Dakota Territory, formed in 1861, but joined the union as a separate state, Nov. 2, 1889. Two senators and two representatives-at-large are returned to congress. Pop. (1950) 619,636. Consult History of N. Dakota, L. F. Crawford, 1931.

**North Devon.** Island of British N. America, better known as Devon (*q.v.*).

**North Downs.** Range of broad chalk ridges which traverses the counties of Surrey and Kent, England, from W. to E. and extends 95 m. from Farnham to the English Channel between Dover and Folkestone. The hills are breached by deep gaps, and separate the London Basin (*q.v.*) from the Weald of Kent and Sussex. The western end is a narrow ridge, the Hog's

Back, alt. 489 ft. and a quarter of a mile broad at the top. The Wey, flowing S. of the Hog's Back, breaches the Downs at the Guildford gap. Leith Hill, 965 ft., marks the highest point of the range, and a height of 868 ft. is reached E. of Caterham. Box Hill, 590 ft., near Dorking, is a well-known beauty spot. The ridges are followed in several places by the Pilgrims' Way, traditional route of pilgrims from Winchester to Canterbury.

## NORTHERN IRELAND: PART OF THE U.K.

Hugh Shearman, Ph.D., author of several books on N. Ireland

*The physical features, industry, and history since 1920 of the N.E. corner of Ireland are here described. For the earlier history of this region see Ireland. See also Irish Republic; Belfast, Londonderry, and other towns; and the colour map facing p. 4564*

Northern Ireland is part of the United Kingdom of Great Britain and Northern Ireland. It is frequently called Ulster, an ancient name applied to a province or kingdom in the N. of Ireland which was at different historical periods rather larger or smaller than the present Northern Ireland. Northern Ireland consists of six counties and the two county boroughs of Belfast and Londonderry. Belfast is on ground which at one time formed part of the two counties of Antrim and Down.

	Area sq. m.	Pop. (1951)
Antrim	1,098.36	231,149
Armagh	488.69	114,254
Belfast C.B.	23.99	443,671
Down	951.62	241,181
Fermanagh	652.99	53,044
Londonderry (incl. C.B.)	804.34	155,540
Tyrone	1,218.04	132,082
Totals	5,238.03	1,370,921

The average density of population is 257 to the sq. m. More than half the population of N. Ireland lives in urban areas, a third

### North-East Frontier Agency.

That part of Assam, India, bordering Tibet and Burma. Mountainous and inhabited by hill tribes, it is administered directly by the governor of Assam acting through a political officer in each of the six divs. into which it is split. Area 34,969 sq. m. Pop. (est.) 75,000.

**North-East Passage.** Name of a route round the N. of Eurasia to China (Cathay). Attempts to make it, undertaken mainly by Englishmen and Dutchmen, Willoughby and Chancellor, 1553 and Barents, the Dutch navigator, 1594-95, failed in their main purpose, but succeeded in opening up a trade with Russia in furs, animal oil, etc. The North-East Passage was made for the first time in 1878-1879 by Nordenskiöld (*q.v.*).

**Norther.** Name for the bitterly cold, often snow-filled, N. and N.W. winter winds experienced in Texas and the Gulf of Mexico region. They are caused by the movement of air from an intense anticyclone towards the rear of a vigorous depression over the W. Caribbean Sea, their strength being due to the marked progressive gradients. The norther sometimes results in temperatures falling 30° F. in an hour.

being in Belfast and its immediate surroundings. N. Ireland has for many years had the highest birth rate in the British Isles. The total area of N. Ireland is roughly one-sixth of the whole island of Ireland. It includes very varied scenery, hills, glens, and much open rolling country, and a lake district in Fermanagh. In the centre is a level plain surrounding Lough Neagh, the largest lake in the British Isles, drained by the Bann, N. Ireland's longest river. The seaboard of 245 m. includes some fine strands and lofty cliffs and several large tidal inlets and estuaries. On the S. and W. there is a land frontier of 200 m. with the Irish Republic.

The capital of N. Ireland is Belfast (pop. 443,671) with large suburbs lying just outside its county borough boundary so that it includes over half a million people. The next largest population centre is Londonderry (50,092). Next is the popular seaside resort of Bangor (20,610) in



co. Down. Other towns of over 10,000 people include Portadown, Lurgan, Lisburn, Ballymena, Newry, Newtownards, Larne, and Coleraine. Smaller towns include the historic little cathedral city of Armagh and the ancient port and fortress town of Carrickfergus.

**CONSTITUTION AND ADMINISTRATION.** The Government of Ireland Act, 1920, set up a legislature in Belfast for Northern Ireland, with local authority. At the same time N. Ireland has a federal status within the U.K., with 12 M.P.s at Westminster. The frontiers of N. Ireland were guaranteed by a tripartite agreement in 1925 between the govts. of the U.K., the Irish Free State, and N. Ireland. In the Ireland Act, 1949, it was enacted that no change should be made in the constitutional status of N. Ireland without the consent of the parliament of N. Ireland.

A large part of the public affairs and services are under direct legislative control of the U.K. parliament. Subjects thus reserved include the Crown and succession, peace, war, or neutrality, the armed services, relations with foreign powers or other parts of the Commonwealth, titles of honour, extradition, naturalisation, aliens, foreign trade, navigation by sea or air, post office, submarine cables, radio, lighthouses, coinage, weights and measures, trade marks, copyright, and patents. In these and other matters, N. Ireland has exactly the same status as England, Wales, or Scotland.

#### Northern Ireland Parliament

The parliament of Northern Ireland consists of a house of commons of 52 members elected by universal adult franchise from single-member constituencies, and a senate or upper house of 24 members elected by the house of commons on a proportional principle together with the lord mayor of Belfast and the mayor of Londonderry. The house of commons has a maximum life of five years; an elected senator holds office for eight years, half retiring every four years. There is a prime minister of Northern Ireland, and ministries of finance, home affairs, labour and national insurance, education, agriculture, commerce, and health and local government. The head of the government and representative of the sovereign within the Northern Ireland constitution is the governor. He summons, prorogues, and dissolves parliament and gives the royal assent to its legislation.

The taxation revenue of N. Ireland goes into the U.K. exchequer. A portion of it, called the imperial contribution, is retained to pay for Northern Ireland's share of general national expenditure. This averaged over £10 million a year, totalling £360 million over the period up to 1956. Also retained is an annual sum of about £3 million to meet certain administrative expenses and loan charges relating to the period before 1921. Then a sum is handed back to the N.I. govt. to pay for those services delegated to it. This sum, which increased with expanding social services and the falling value of money, is determined by a joint exchequer board on the principle that N.I. shall have equality in social services with other parts of the U.K. and equality in other services having regard to local conditions. In the mid 1950s it was annually between £40 and £50 millions. The govt. of N.I. may itself impose a small range of taxes, including death duties, stamp duties, and motor vehicle duties. These excise duties are kept at about the same level as in Great Britain.

#### Local Government

Local government is under the supervision of the ministry of health and local government. There are five main types of local government authority, all elected: the corporations of the two co. boroughs of Belfast and Londonderry; the borough councils of nine other towns; the urban district councils of 24 smaller towns, the six county councils, and 32 rural district councils. The annual expenditure of these bodies is over £40 million, and their total capital indebtedness is over £50 million. Other public bodies, *e.g.* water and harbour commissioners, fulfil special functions, and a variety of administrative boards, committees, and authorities operate the public health and other social services under the appropriate ministries.

The judicial system is similar to that in England and there is an ultimate appeal to the house of lords. The higher courts are under the U.K. govt., and the lower under the N.I. govt. Petty sessions courts are presided over by paid professional resident magistrates; the judicial powers of justices of the peace have been abolished.

**RELIGION, EDUCATION, CULTURE.** One-third of the population is R.C. Presbyterians are the largest Protestant denomination,

the second largest being the (Anglican) Church of Ireland.

#### Educational Facilities

Co. and co. bor. education authorities and private and religious bodies run schools, all under supervision of the ministry of education. There are some 750 county primary schools and 850 primary schools under voluntary or other authorities, and a primary school population of over 200,000. There are over 80 grammar schools attended by over 30,000 pupils. Between these two classes of school there is an expanding group of intermediate schools. There are two teachers' training colleges. Belfast is the seat of Queen's University. Magee University College, Londonderry, a recognized college of Queen's University from 1951, provides arts courses. There are numerous technical schools.

The establishment of the government in Belfast caused it to become increasingly a cultural centre. The period after 1922 saw the establishment of institutions stimulating activity in the arts—a regional broadcasting organization under the B.B.C., a council for encouraging music and the arts, a greatly extended library service, art gallery and museum, a transport museum, the preliminary organization of a folk museum, a theatre company, and greatly extended facilities for adult education. The province produced a number of writers of note, *e.g.* George Russell (A.E.), Forrest Reid, Robert Lynd, St. John Ervine, Louis MacNeice; its artists have included Sir John Lavery, William Conor, Paul Henry. Among other Ulster-born public men were Sir Robert Hart, Lord Kelvin, Earl Alexander of Tunis. Mechanical and executive ability are common.

**INDUSTRY AND TRADE.** Farming is the largest industry, providing over a quarter of Northern Ireland's total exports. There are over 90,000 agricultural holdings of over one acre, and 70 p.c. of the farming land is in farms of 15 to 100 acres. Mixed farming is the general rule, and much of the crops is used to feed livestock and poultry. Chief crops are oats and potatoes, with smaller areas of roots and kale, flax and seed hay. Fruit farming is carried on, particularly in co. Armagh; canned foods and milk products are exported. Most important agricultural exports are fat and store cattle, fat lambs, bacon, eggs, butter, grass seed, seed potatoes,

apples. Fishing is carried on, for eel and pollan in Lough Neagh, and for salmon on the N. coast. White fish is landed at Portavogie, Kilkeel, and Annalong in co. Down, and a herring fleet operates from Ardglass, co. Down.

#### Manufactures

Ulster linen is one of the most important exports of the U.K. as a whole. Cotton goods and synthetic fabrics are made, and there is a considerable clothing industry. At Belfast are important ship-building yards, with a great liner tradition but making vessels of every kind and doing extensive marine engineering and repair work. Aircraft, ropes and cables, heavy and light mechanical and electrical engineering products, whiskey, jam, paper, soap, pottery, tyre fabric, electric cables, radio and optical components, boxes and containers of metal, fibre, or card, cement, carpets, furniture, boots and shoes, hosiery, millinery, leather goods, matches, mineral waters, biscuits, tobacco products, confectionery, lace, fertilisers, office machinery, perambulators, toys, and many other miscellaneous goods are manufactured for export.

The Industries Development Acts (N.I.), 1945-53, administered by the ministry of commerce, enabled the govt. to encourage and support industrial expansion.

Total annual trade is between £500 and £600 million, with imports slightly exceeding exports: in 1955 exports were £267,475,000 (approx. £200 per head of the population) and imports £295,327,000. In addition to visible and calculable exports there are others, including an expanding tourist industry.

**TRANSPORT AND COMMUNICATIONS.** Belfast is the main transport junction of the province and its principal port. Passenger shipping services connect Belfast regularly with Heysham, Liverpool, Glasgow, Ardrrossan, and at intervals with other ports. A service goes between Larne and Stranraer, and sea ferry services connect both Belfast and Larne with Preston docks and carry road traffic. Passenger and cargo services also run from Londonderry to other ports and cargo services from Coleraine and Newry. Belfast is the chief port for cargo. From the airports—Nutt's Corner, co. Antrim, near Belfast; Belfast Harbour airport; and Newtownards airport, co. Down—air services go to Glasgow, Edinburgh, Castle Kennedy, Newcastle, Leeds, Manchester, Liverpool, Birming-

ham, London, Cardiff, Bristol, and other cities. There is no customs barrier between Northern Ireland and the rest of the U.K., but there is one between Northern Ireland and the Irish Republic.

Rail services and some road transport services are conducted by the Ulster transport authority. The Great Northern Railway, connecting Belfast with Dublin, is under a board and administered jointly by N. Ireland and the Irish Republic. The ministry of commerce is responsible for the upkeep of certain main roads, the rest being cared for by local authorities. The ministry of finance is responsible for the Lower Bann navigation and the ministry of commerce for the Lagan Canal.

**HISTORY.** The first govt. of N. Ireland, led by Sir James Craig (later Viscount Craigavon), was established in 1920, its departments being set up and its powers handed over during 1921. Shortly afterwards, when civil war broke out in the adjacent Free State, it overflowed into N. Ireland, and there was a period of bombing, shooting, and incendiarism.

#### Prime Minister.

The Unionist govt. of Lord Craigavon remained in office until his death in 1940. The Unionist party (in favour of the union with Britain) continued to have strong majorities at all general elections. Lord Craigavon was succeeded as prime minister by J. M. Andrews, and he in turn in 1942 by Sir Basil Brooke, later Viscount Brookeborough. The policy of the govt. might be described as progressive conservatism, going sometimes rather "left" of English Conservatives in its application of principles of public ownership and control. The parliamentary opposition has consisted of several groups of Irish nationalists and three labour parties.

Relations with the Irish Free State fluctuated, being perhaps at their best in 1925 when the two govts. together with the U.K. govt. agreed on the frontier between N.I. and the Free State and pledged themselves to mutual aid. They deteriorated after 1931 with Eire's progressive withdrawal from Commonwealth connexions and its increasing irredentist claims of territory within N. Ireland. From time to time N. Ireland was troubled by the activities of Irish republican terrorists, with bomb outrages, incendiarism, and occasional murders.

The economic depression from 1930 afflicted Northern Ireland severely because of its dependence on export trade. The outbreak of war in 1939 gave N. Ireland increasing economic and strategic importance, particularly in view of Eire's neutrality. The province contributed many able men and women to the armed services. Food production expanded proportionately in N. Ireland more than in any other part of the British Isles. The Belfast shipyards contributed 140 warships and 10 p.c. of the whole merchant shipping of the U.K. There was a large output of tanks, guns, ammunition, aircraft (including 1,500 heavy bombers), accessories (including 2,000,000 parachutes), and a third of the rope produced in the U.K. for the War Office. The N. Ireland textile industry produced 90 p.c. of the shirts used by the British forces. N. Ireland also had great strategic importance, providing a vital base to protect Britain's western approaches from 1940 and patrol the Atlantic, and it received the first U.S. troops sent to the U.K. to train for the invasion of Europe.

After the war the province continued to prosper. Although the Ulster Unionist party continued to be affiliated with the Conservative party, close practical cooperation was achieved with the Labour govt. in Great Britain, and all the main features of the British "welfare state" were introduced in Northern Ireland. A new and extended education system was also established. Extensive reafforestation was put in hand.

#### Increasing Industrialisation

A number of new industries were introduced, to diversify the province's economy, industrialists responding favourably to the advantages offered, and 189 plans for industrial expansion were undertaken with government aid in the ten years following the end of the war, giving employment to 29,000 workers. Further big industrial undertakings were subsequently established.

**Bibliography.** Ulster Year Book, as published. History of Northern Ireland, D. A. Chart, 1927; The Birth of Ulster, Cyril Falls, 1936; Government of Northern Ireland. N. Mansergh, 1936; Constitution of Northern Ireland, 3 vols., A. S. Quekett, 1928-47; Rural Life in N.I., J. M. Mogeey, 1947; The Land of Ulster: Report of Land Utilisation Survey, D. A. Hill, 1948; Ulster, H. Shearman, 1950; The



Town in Ulster, G. Camblin, 1952, Ulster Under Home Rule, ed. T. Wilson, 1955; Northern Ireland in the Second World War, J. W. Blako, 1956.

**Northern Lights.** Name popularly given to the phenomenon of the Aurora Borealis (*q.v.*).

**Northern Line.** London railway. The first section was opened in 1890 as the City and S. London tube, and ran from King William Street to Stockwell, a distance of  $3\frac{1}{4}$  m. It was subsequently joined to the Hampstead and Highgate tube rly., and extended in both directions, and by 1941 had N. termini at High Barnet and Edgware and S. terminus at Morden, a distance of  $40\frac{1}{4}$  m., most of which is underground. Taken over with the other underground railways by the London Passenger Transport Board in 1933, it was nationalised in 1948 and operated by the London Transport Executive.

**Northern Rhodesia.** British protectorate in S. Africa. It lies between long.  $22^{\circ}$  and  $33^{\circ} 33'$  E. and between lat.  $8^{\circ} 15'$  and  $18^{\circ}$  S. It is completely surrounded by neighbouring territories, Angola, Belgian Congo, Tanganyika, Mozambique, Southern Rhodesia, and South-West Africa. It has an est. area of 287,640 sq. m., consisting for the most part of a vast tableland 3,000–5,000 ft. in height. Around the Zambezi R., which forms the greater part of the southern boundary, there is magnificent scenery, including the Victoria Falls, one of the natural wonders of the world. The country has luxuriant forests and is well watered with vast swamps.

The European pop. (1950) was 36,000; est. African pop. 1,700,000; Asiatic pop., mostly British Indians, about 3,000. The Europeans are settled mostly near the rly. running from Southern Rhodesia to the Belgian Congo via the Victoria Falls, or in the copper belt in the neighbourhood of the Belgian Congo.

It was not until 1851, when Livingstone began his great missionary journeys, that authentic information was obtained about this territory. Before 1899 it was included in the charter of the British South Africa Co. In 1924 the British government assumed control and appointed a governor, assisted by an executive council (officials only) and a legislative council (partly elected non-officials).

In its earlier stages the territory was mainly agricultural, the chief products being maize, live-

stock, and tobacco, but rich copper deposits have been discovered and developed into an extensive industrial area employing many Europeans and natives, and it is now one of the world's chief copper-producing areas. Other minerals developed include zinc, which ranks next to copper in importance. Consult *An African Survey*, Lord Hailey, 1938. For map, see Southern Rhodesia.

**Northern Territories.** Part of the state of Ghana, formerly a British protectorate. It is bounded N. and W. by Ivory Coast, E. by Togoland, and S. by Ashanti. Placed under British protection in 1901, it is peopled by Muslim Hausas and Negroes, engaged in agriculture and stock rearing. The chief town is Tamale. Area 38,045 sq. m.; pop. (1957 est.), 1,000,000.

**Northern Territory.** Part of Australia directly administered by the Commonwealth itself. It lies between meridians  $129^{\circ}$  and  $138^{\circ}$  E., N. of  $26^{\circ}$  S., with a coast-line on the Arafura Sea and the Gulf of Carpentaria. From 1863 it formed the N. part of South Australia, and with this status joined the Commonwealth in 1900, but in 1911 it passed under the control of the central authority. The S. comprises a highland area, Macdonnell Ranges, part of the Central Australian desert, although water is found in the valleys and can be reached by artesian bores; northwards lies the plateau with extensive pastoral areas suitable for cattle runs.

The people live mainly in the N. Gold, copper, tin, and wolfram are mined. Darwin is the chief port, and the terminus of the overland telegraph and of the N. section of the Transcontinental Rly. Area 523,620 sq. m. Pop. 30,000 (13,000 aboriginals). From 1927 to 1931 the territory was divided into North Australia, with 287,220 sq. m., and Central Australia, with 236,400. Newcastle Waters is the capital of North and Alice Springs of Central Australia. Consult *N. Australia*, C. P. Conigrave, 1936.

**Northern Union.** The professional British Rugby football organization from 1895 to 1922, renamed Rugby League in the latter year. See Football.

**Northfield.** Dist. of Worcestershire, England, now a suburb of Birmingham. It has a rly. station, and the principal industries are the manufacture of nails and other forms of hardware. Pop. 46,000.

**Northfleet.** Urban dist. of Kent, England, adjoining Gravesend. It is on the Thames, 22 m.

from London, with a rly. station. The church of S. Botolph is a fine building, partly Perpendicular. The industries include the manufacture of cement, paper and chemicals. Pop. (1951) 18,821.

**North Foreland.** Headland of Kent, England. Off here three actions were fought in the wars with Holland. The first battle opened June 2, 1653, with an attack by the English admirals, Monk, Deane, and Lawson, on the Dutch fleet of Tromp. With the arrival of Blake on the following morning the Dutch made a hasty retreat, having lost heavily.

The second battle was begun June 1, 1666, by Monk's attack on the Dutch under de Ruyter, and lasted for four days. On the 2nd the battle opened early, and went against the English. The next morning Prince Rupert hastened to Monk's assistance, but after heavy fighting on the 3rd and 4th, the English were obliged to make the Thames, having lost 20 vessels and 6,000 men. A third battle, fought July 25 and 26, 1666, resulted in the flight of the Dutch. See Foreland, N. and S.

**North German Confederation.** Alliance formed in 1866 by 22 sovereign German states. The German Confederation of 1815 was broken up by Prussia's attack on her fellow-member Austria in 1866. After the defeat of Austria, a new alliance, the North German Confederation, was formed, Aug. 18, 1866, consisting of Prussia and the remaining states of the old Bund N. of the Main, except Luxemburg, which was divided between Holland and Belgium. On April 16, 1867, a constituent assembly ratified the constitution, which was proclaimed on July 1. The Bund had an area of 160,000 sq. m. and a pop. of 30,000,000. See Bismarck; Bund; Germany; Prussia.

**North Holland.** Province of the Netherlands, described under Holland.

**North Island.** The smaller and more northerly of the two main islands of the dominion of New Zealand. It has a lat. corresponding to that of S. Spain, a more equable temperature and more evenly distributed rainfall than S. Island, and is more definitely suited to the pastoral industry. The E. and S.E. contain probably the finest sheep country in the world, and the S.W. is ideal for dairy cattle. The N. is steadily developing a fruit industry. North Island comprises four provincial districts: Auckland, Hawke's Bay,

Wellington, and Taranaki; and contains in Auckland and Wellington the two largest cities of the dominion. Rlys. connect Wellington with Auckland, Napier, and New Plymouth. Area, 44,280 sq. m. Pop. (1951) 1,313,920.

**Northmen.** Name given to Scandinavian sea-rovers who began their incursions upon the coasts of W. Europe late in the 8th century. The names Northmen and Viking cover four groups: the Swedes and the Goths, who confined their attentions mainly to the Baltic shores; the Danes from Jutland and Slesvig; and the Norsemen from Norway; though both Danes and Norsemen were names sometimes applied to the whole. In England, the name of Ostmen, the men from the East, was sometimes applied.

The first recorded raids on English, Irish, and French soil respectively are dated in 787, 795, and 799. In the first instance the raids of the Northmen were mere landings in search of booty by pirate crews composed of free warriors who followed some captain of repute. During the early part of the 9th century they were still for the most part ravaging in small bands. Then the small bands began to grow into confederate fleets, Danes and Norsemen acting together.

In the second half of the 9th century supreme kings were establishing themselves in both Denmark and Norway; and this process encouraged minor chiefs to seek other lands and to settle. Danish hosts established themselves in England and made themselves masters of the whole district known as the Danelagh; though Alfred drove them out of Wessex, and in the next century his son and grandson forced them to own the overlordship of the king of England. In France the Viking hosts met with a check when they laid siege to Paris in 885.

After the permanent establishment of the Danelagh in England, and the dukedom of Normandy in France in 912, raiding France and England ceased to be a profitable employment for Danes and Norsemen, though the latter acquired a supremacy in the extreme N. of Scotland, over the islands of the Hebrides, and on the E. coast of Ireland, until their efforts at further conquest in Ireland were finally checked by a crushing defeat at Clontarf at the hands of Brian Boru in 1014. In the days of Ethelred II, at the close of the 10th century, Danish and Norse raids upon England revived: but

the Danish leader Sweyn became king first of Denmark, and then in 1013 of England as well, and in the reign of Canute Denmark finally lost the characteristics of a pirate state.

**Northolt.** Former village of Middlesex, England, part of the bor. of Ealing from 1928. The aerodrome, a terminus for flights to Europe, was used by the R.A.F. as a fighter station in the battle of Britain. It was closed to civil use in 1954.

**North Pole.** Lat. 90° N., one terminus of the earth's axis. The pole itself is the central point of the shallow Arctic basin wherein lies the Arctic Ocean, and its position is static. The position of the N. magnetic pole varies; in 1950 it was at approx 74° N., 100° W., 1,000 m. from the geographical N. pole.

**North Rhine-Westphalia.** A Land of W. Germany, formed 1946 in the British occupation zone from the N. half of the former Rhine (*q.v.*) prov. and the former Westphalia (*q.v.*) prov. Pop. (1955 est.) 14,693,200, of whom 2,796,600 were refugees and expelled persons.

**North Riding.** One of the three administrative divisions (A.S. *thriding*, third part) of Yorkshire, England, and for many purposes a co. of itself, with its own admin. centre, Northallerton. The North Riding is mainly agricultural, but there are rich iron deposits in the Cleveland district. Middlesbrough is the largest place, Scarborough and Whitby are seaside resorts, and other towns are Pickering, Malton, Thirsk, Richmond, Hawes, and Bowes. The Derwent marks the boundary with the E. Riding, and the Ure part of that with the W. Riding. In the extreme W. the fells rise over 2,300 ft. Area, 2,128 sq. m. Pop. (1951) 525,496.

**Northrop, JOHN HOWARD** (b. 1891). American biochemist and biologist. Born in New York, July 5, 1891, he was educated at Columbia university and in 1915 was appointed an assistant at the Rockefeller Institute for Medical Research. He was in the U.S. chemical warfare department in the First Great War, and later held various research posts, becoming a lecturer at Johns Hopkins university in 1940. In the Second Great War he was a consultant to the national defence research committee. For his researches into the purified production of enzymes and virus proteins he shared with Prof. W.

M. Stanley (*q.v.*) half the 1946 Nobel prize for chemistry. In 1939 he published *Crystalline Enzymes*.

**North Sea.** Arm of the Atlantic Ocean, and the most easterly of the British seas. It covers part of the continental shelf of W. Europe, and except for the Scandinavian deep, over 2,400 ft., off the S. of Norway, it is relatively shallow, with an average depth of 120 ft. in the S. and 350 ft. in the N.

This sea being physically a connexion between the lowlands of E. Britain and the great European plain, its coast-line is not a permanent feature, the former Zuyder Zee was an accidental enlargement, and English coastal areas are being slowly removed, while the great rivers tend to fill it with their loads of sediment, so that the Rhine delta and the Thames estuary experience encroachments of the land on the sea. Structurally the North Sea is part of the lowland between the old mountains of Scandinavia and Scotland and the middle-aged mountains of S. England, Belgium, and N. Germany. The S. outlet by the Strait of Dover is not inherent to the structure, and occurred in a comparatively recent geological epoch. Between these ranges the rivers form one system which, in the days before the area was drowned, when the plains were connected by dry land may have all—Thames, Ouse, Lower Rhine, Elbe, etc.—joined to make one great N.-flowing river.

The submarine surface is marked by inequalities: the Dogger, Jutland, and Great Fisher banks are submarine ridges, the Silver and other pits are submarine hollows. The waters slowly circulate, a S.-flowing current along the British coast becoming a N.-flowing current on the Eastern shore; the tides are unusually complicated, they enter by the Strait of Dover and round Scotland, flowing S. along the British coast and N. along the E. shore, scouring the great estuaries on both sides.

Owing to these movements the floating eggs of the food fishes are widely distributed, and the shoals of fish, such as the herring, appear to follow regular movements which control the work of the trawlers. These fish feed on the large quantities of the lower forms of animal and vegetable life in which the North Sea abounds, and thus this marine area is one of the chief of the world's fisheries.

Commercially the North Sea is the most important water area in the world, and historically, with





North Sea. Chart showing the fishing banks and steamship routes between Great Britain and the principal Continental North Sea ports

the English Channel, it is a predominant physical feature of W. Europe. Its area is 190,000 sq. m.; maximum breadth 420 m., and length 700 m.

From the earliest times Great Britain's security has depended upon her control of the North Sea, without which she would be open to invasion. It was across the North Sea that the Vikings sailed, and the same route was taken by the Saxon invaders. It was not until Alfred the Great established English naval power that the coasts of Great Britain became comparatively secure.

By the beginning of the 15th century England had gained virtual control of the North Sea, which became the route for trade with the Low Countries. The only interference was from the attacks of pirates. English security in the North Sea was due greatly to the fact that countries with North

Sea coastlines were constantly at war, and, except Holland, none became sufficiently strong to dispute English supremacy. Even the Dutch avoided fighting general naval engagements in the North Sea, and their warlike activities were generally confined to demonstrations or forays. Similarly, the French and Spanish fleets avoided the North Sea, where Great Britain was always in a position to concentrate overwhelming naval strength; moreover, in order to reach the North Sea, Spanish or French ships had to pass through the English Channel. The only hostile Spanish warships which entered the North Sea were the storm-battered remnants of the defeated Armada in 1588.

On the other hand, the North Sea was open to British warships and transports taking troops to the Continent, and it was command of the North Sea that made

it possible to maintain large continental British armies in the 16th, 17th, and 18th centuries. When these armies met with disaster it was always after they had landed, and was never due to inability to transport and maintain them by sea.

It was not until the development of the German empire in the last decades of the 19th century that any nation became strong enough to dispute British supremacy in the area. Germany set out to achieve naval parity with Great Britain; these ambitions were openly declared when Kaiser William II rechristened the sea the German Ocean.

#### North Sea in the Two Wars

Nevertheless, from the outbreak of the First Great War, Great Britain retained virtual control of the North Sea and was able to maintain a strict blockade, and virtually to close its waters to enemy surface vessels. The Royal Navy laid vast minefields to block its approaches; cruisers and destroyers patrolled unopposed; and battle cruisers operated as far afield as the Skagerrak. German warships were unable to patrol even their own coastline, and when they did venture far into the North Sea they met with disaster, as at the Dogger Bank, Jan. 24, 1915. It was only by sailing in the territorial waters of neutrals that they were able to maintain merchant traffic.

In the Second Great War, Germany repeated her 1914-18 policy of keeping her main surface fleet intact. On the other hand, Great Britain was in a less advantageous position than in the First Great War, primarily because she was unable to hem in the enemy with a great minefield. One was laid parallel to the east coast of Great Britain shortly after the outbreak of war in 1939, and this successfully prevented any German warships except shallow-draft E-boats attacking North Sea shipping. With her occupation of the European coast from Norway to Ushant, Germany had innumerable bases for air operations over the North Sea, and throughout most of the war British warships and merchantmen required heavy anti-aircraft protection. Except when a definite object was in view, major units of the Royal Navy used the North Sea little in the early years of the war and most of the British patrolling was confined to cruisers, destroyers, and motor-torpedo boats working in close cooperation with shore-based aircraft. Gradually the Royal

Navy and R.A.F. regained control, and by 1941 were in a position to ensure the safe passage of a number of expeditions against occupied Norway, besides carrying out attacks on supply convoys.

In the summer of 1942 the initiative in the North Sea clearly passed to the Allies. E-boats, no longer offensive, took up the defensive duty of protecting German convoys from attack. From 1943 onwards the British Home Fleet made periodical sweeps right up to the Norwegian coast. Virtually the only damage was by air-laid mines. After the Allied invasion of Europe in June, 1944, operations to check enemy forces coming down from Norway were almost unopposed, while U-boats suffered heavy losses. The clearing of the minefields occupied large fleets of British and German sweepers for nearly a year after hostilities ceased. See *Dogger Bank*; *Jutland*; *Skagerrak*. Consult *The Battle of the Narrow Seas*, P. Scott, 1945.

**North Sea Fisheries Convention.** Agreement made at The Hague in May, 1882, between Great Britain, Germany, Belgium, Denmark, France, and Holland, with power reserved to Sweden and Norway to come in on giving notice. This convention declared that the fishermen of each country should have the exclusive right of fishing within a distance of 3 m. from low-water mark along the whole extent of their respective countries, as well as of dependent islands and banks. As regards bays and inlets the 3 m. were to be calculated from a line drawn across the bay in the part nearest the entrance where the bay did not exceed 10 m. in width.

Other clauses stated that fishing boats were to be registered, and to bear their registration marks and numbers distinctly marked, and to carry official papers showing their nationality. Minute rules and regulations governed the manner of fishing and the behaviour of fishing boats to each other, e.g. the right to cut entangling lines. The regulations were to be enforced by means of special cruisers having the right of visit, search, and arrest. The arrested boat was to be handed over to its own country to be dealt with and punished.

**North Somerset.** This island of British N. America is noted as Somerset.

**North Staffordshire Regiment.** Regiment of the British army. Raised in 1756 as the 64th Foot, the regiment earned its

first battle honour at Guadaloupe and fought in the American War of Independence.



North Staffordshire Regiment badge

the Sikh War, the 64th Foot went to the Persian Gulf in 1856 to assist in suppressing piracy, one of the few British units to carry the battle-honours *Reshire*, *Bushire*, and *Koosh-ab*. It fought in the Crimea, and in 1876 was in garrison at Malta, when it received its alternative title, *The Prince of Wales's*, and was granted the prince of Wales plume, which now forms part of its badge.

In 1881 the 64th Foot absorbed the 98th Foot, which had been raised in 1824. The amalgamation is commemorated in the Stafford knot incorporated in the regimental badge. The 98th had distinguished service in the China War, 1840-42, and later fought in the Crimea. The combined regiment served in the Sudan in 1896 and earned much distinction in the S. African war. Seventeen battalions of the regt. were raised in the First Great War, winning six V.C.s and the battle honours *Armentières*, 1914; *Somme*, 1916, '18; *Arras*, 1917; *Messines*, 1917, '18; *Ypres*, 1917, '18; *St. Quentin Canal*; *Sari Bair*; *Kut-el-Amara*, 1917; and *N.W. Frontier*, 1915. The regiment served in France, N. Africa, Italy, and Burma in the Second Great War. The regimental depot is at Lichfield, Staffordshire.

**North Star.** Another name for the Pole Star (*q.v.*).

**Northstead, MANOR OF.** The stewardship of this Yorkshire manor is an office of profit under the crown, and acceptance of it will enable an M.P. to resign his seat, which he cannot do directly. See *Chiltern Hundreds*; *Member of Parliament*.

**Northumberland.** County of England. The most northerly of all, it is separated from Scotland by the Cheviot Hills and the Tweed. Its area is 2,018 sq. m. and it has a long coast-line on the North Sea. From there the surface rises to the Cheviots, the highest point of which is 2,676 ft., and it varies between moorland and verdant undulations, intersected by fertile and wooded valleys. A geological feature is the

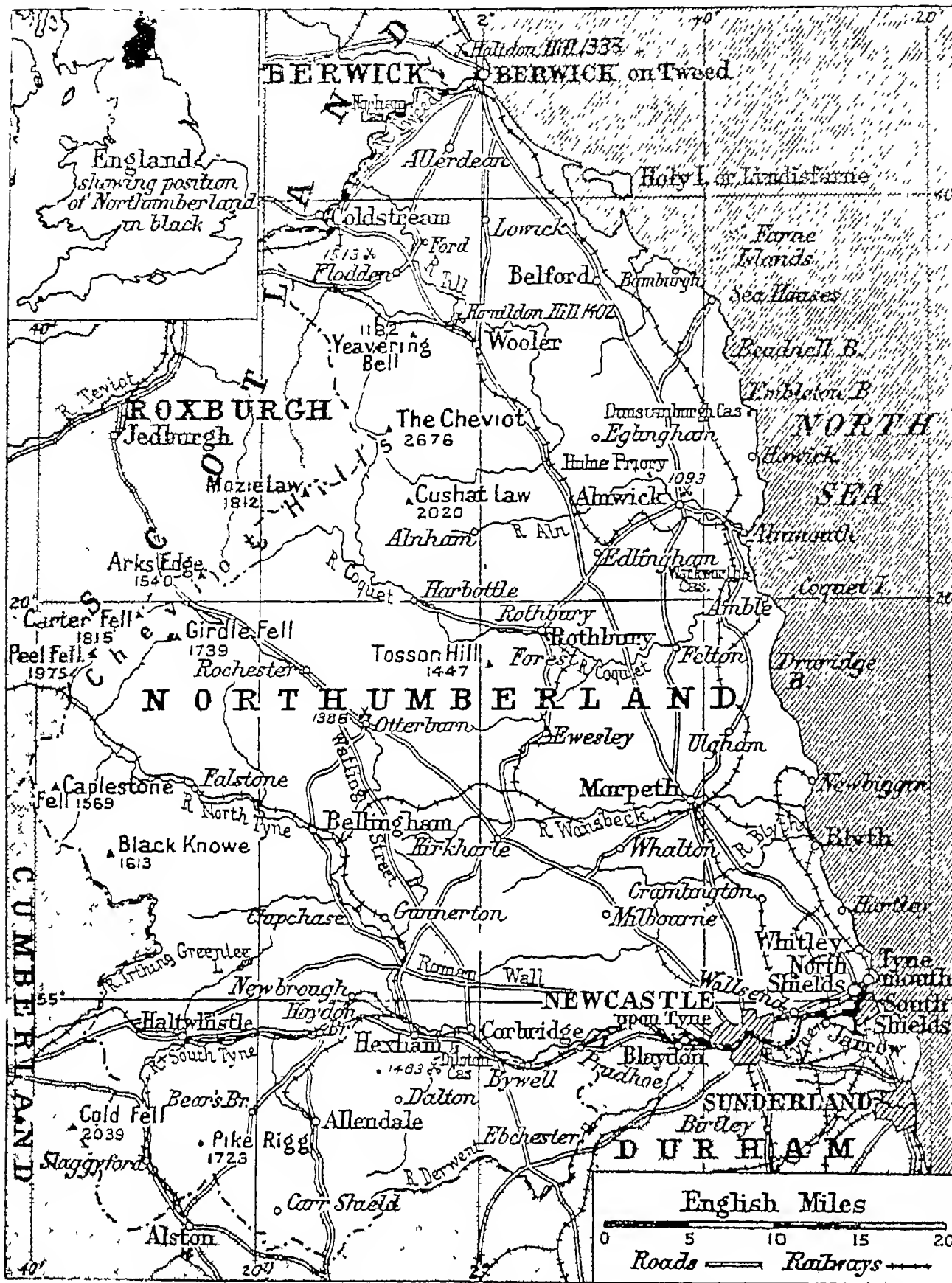
Great Whin Sill, a sheet of basalt forming a succession of crags stretching with intervals from the N.E. into Cumberland.

The chief rivers are the Tyne, Tweed, Till, Wansbeck, Aln, and Coquet, and there are several small lakes, Greenlee Lough being the largest. Off the coast are Coquet and Holy Islands, and the Farne Islands. Agriculture flourishes along the coast and in the valley districts, and the rearing of Cheviot sheep and Durham short-horns is actively pursued. There is a coalfield in the S. part of the county, and the urban industries are mainly associated with this. Newcastle-upon-Tyne is a co. of itself, and Alnwick is the co. town; other places are Tyne-mouth, Berwick-on-Tweed, Wallsend, Morpeth, and Hexham. Blyth is a fishing port, and there are several populous urban districts in the mining area. There are 3 co. and 7 bor. constituencies. Northumberland forms the diocese of Newcastle.

In Anglo-Saxon times Northumberland formed part of the kingdom of Bernicia, and then of Northumbria. Its history is dominated by the fact that it was on the border between England and Scotland, and was the scene of centuries of constant warfare. It was protected by fortresses, and herein are Flodden, Otterburn, Homildon Hill, and other battlefields. The county contains also Bamburgh, Lindisfarne, and the castles, now mainly ruins, at Norham, Dilston, Warkworth, Dunstanburgh, Bamburgh, and Prudhoe. Alnwick has been largely rebuilt; Ford and Chipchase are also mainly modern. The Roman Wall passes through the county. Pop. (1951) 798,175.

**LITERARY ASSOCIATIONS.** From its position as a border county Northumberland has rich association with the old ballad literature of the border district. Among these ballads may be named *The Brave Earl Brand*, *Jack and Tom*, *The Baillie of Berwick*, *Sir Arthur and Charming Mollee*. Bamburgh is reputed by some to be the Joyous Gard of Arthurian legend; it is the scene of much prose and verse concerning *Grace Darling*, and of *Besant's Dorothy Forster*. Much of the action of *Scott's Marmion* takes place in the county (Flodden, Holy Isle, Norham). *Swinburne* wrote of the county. At Warkworth was born the 17th century historian, *John Rushworth*, and the hermitage there afforded the subject of *Bishop*





Northumberland. Map of the north-eastern county of England, famous for its historical associations with the Scottish border

Percy's The Hermit of Warkworth. At Newcastle was born Mark Aken-side. Thomas Bewick came from Cherryburn, near Newcastle.

A history of the co. in 9 vols. was issued by its historical committee, 1893-1909.

**Northumberland, DUKE OF.** Title held since 1766 by the family of Percy. There was an earl of Northumberland at the time of the Norman Conquest and afterwards, but as an hereditary title it dates from 1377, when Henry Percy, Baron Percy, was made earl. He was killed at Bramham Moor in 1408 and the title was forfeited, but it was restored to his grandson and stayed with his descendants until the 11th earl died in 1670. During 1551-53 there had been a duke of Northumberland, John Dudley (*v.i.*). From 1683 to 1716 George Fitzroy, a natural son of Charles II, was duke of Northumberland, but he died without sons.

The 11th earl's daughter married Charles Seymour, duke of Somers-

set (1662-1748), and their son Algernon, the 7th duke, was made earl of Northumberland in 1749. He had no sons, and the earldom passed to his son-in-law, Sir Hugh Smithson, who took the name of Percy. In 1766 he was made duke of Northumberland. In 1875, when the 4th duke died, the title passed to a grand-nephew, George, earl of Beverley, and from him the later dukes are descended. Henry George Alan, 9th duke (1912-40), was parliamentary private secretary to the lord privy seal, 1935, and to the secretary for Air, 1936. Killed in action with the B.E.F., May 21, 1940, he was succeeded as 10th duke by his brother, Hugh Algernon (b. April 6, 1914), who became in 1945 a lord in waiting. The duke's chief seat is Alnwick Castle, and he owns Syon House, Brentford, and Albury Park, Guildford. An eldest son is called Earl Percy. *See* Percy.

**Northumberland, JOHN DUDLEY, DUKE OF** (c. 1502-53). English soldier and politician.

The attainder of his father, Edmund Dudley (c. 1462-1510), was reversed by Henry VIII. and as Viscount Lisle. John proved himself a soldier and administrator of ability. In 1547 he was made earl of Warwick and defeated the Scots at Pinkie. He became earl marshal and duke of Northumberland in 1551. He sought to consolidate his position by the marriage of his son Guildford to Lady Jane Grey, May, 1553, but his plan to make himself the power behind the throne collapsed with the accession of Mary, and on Aug. 22 he was executed for treason. He was the father of Elizabeth's earl of Leicester.



John Dudley, Duke of Northumberland After Holbein

**Northumberland Avenue.** A London thoroughfare. Connecting Trafalgar Square with the Victoria Embankment, it derives its name, like the neighbouring Northumberland Street, once Hartshorn Lane, from the former Northumberland House, which stood on the S. side of Charing Cross, 1605-1874. Opened in 1876, it contains the buildings of the Royal Empire Society, the Constitutional Club, offices of the S.P.C.K. and the Standard Bank of S. Africa, the Playhouse Theatre, and the former Victoria and Metropole hotels, which were taken over by the War office in the Second Great War.

**Northumberland Fusiliers, ROYAL.** Regiment of the British army. Raised privately in Holland



Northumberland Fusiliers badge

in 1674 for service with the Dutch in their war against France, the regiment came to England in 1685 and was taken on the establishment as the 5th Foot. It served in Ireland with William III and then went to Flanders. At the battle of Wilhelmstahl in 1762 it defeated a French grenadier regiment, whose badge it adopted, though it was not designated a fusilier unit until 1836. It also captured the French colour which is still trooped every S. George's day. Service in the W. Indies earned the honour St. Lucia, 1778, and twelve honours and the regimental nickname.

The Fighting Fifth, were gained under Wellington in the Peninsula.

The regiment was at the relief of Lucknow, with Roberts in Afghanistan, and with Gordon at Khartum. In the S. African War it distinguished itself at the Modder river. Fifty-two battalions were raised in the First Great War and won 67 honours, including Mons; Marne, 1914; Ypres, 1914, '15, '17, '18; St. Julien; Somme, 1916, '18; Scarpe, 1917, '18; Selle; Piave; Struma; Suvla. It was one of the first regiments in France in the Second Great War, and in 1940 formed part of the force defending Arras. The regimental depot is at Newcastle-upon-Tyne.

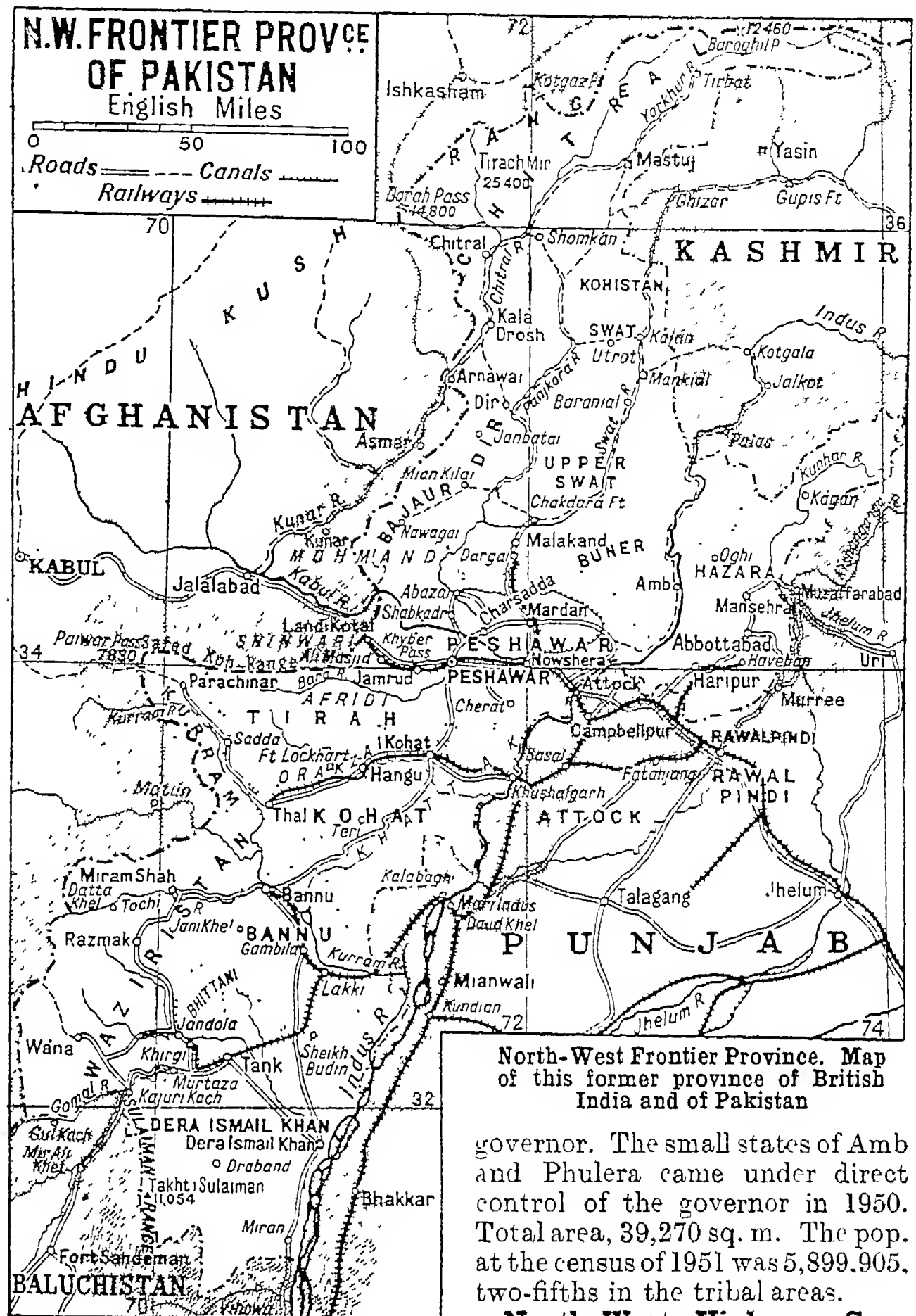
**Northumbria.** Kingdom of Anglo-Saxon Britain. It stretched from the Humber to the Forth, and from the Pennines and Ettrick Forest to the sea, and was formed about 600 by the union of the smaller kingdoms of Bernicia and Deira. Edwin, king of Northumbria until 633, was the most powerful ruler in the whole of England.

After 670 Northumbria declined in importance, and most of its later kings were subject to the rulers of Mercia or Wessex.

**North Walsham.** Urban dist. and market town of Norfolk, England. It stands on the river Ant, 14 m. N. of Norwich and 131 m. N.E. of London, and has two rly. stations. The principal building is the Perpendicular church of S. Nicholas. Nelson attended for a time the Paston grammar school, founded here in 1606. The village of Paston is  $3\frac{1}{2}$  m. away. Market day, Thurs. Pop. (1951) 4,733.

**North-West Europe Expeditionary Force.** British troops sent to assist Norway after the German invasion. Commanded by Gen. B. Paget, the force landed April 15, 1940. The bulk were withdrawn from Namsos, May 1-2, and the last elements by June 10. See Narvik; Norway: Second Great War.

**North-West Frontier Province.** Former province of British India and of Pakistan, absorbed in W. Pakistan in 1955. The river Indus was the E. boundary, except where the Punjab extended across it to the W. near the Kurram river, and where the prov. crossed the Indus to the E. in Hazara. Baluchistan and Afghanistan lie W., and Kashmir N.E., of the area. The Kabul, Kurram, and Gomal rivers cross it from Afghanistan to join the Indus. The mts. are the Hindu Kush, Safed Koh, and Suleiman ranges. The area is mountainous,



North-West Frontier Province. Map of this former province of British India and of Pakistan

but about one-quarter of the area is under cultivation, wheat being the largest crop. Maize, sugar cane, fruit, and nuts are also grown. Sheep-rearing is important, the wool being woven into carpets. Goats are reared. Hydro-electric and irrigation projects in being and under construction are expected to make the area self-sufficient in food. The capital was Peshawar, dominating the Khyber Pass into Afghanistan.

The prov. was formed in 1901, and became autonomous in 1937. It was divided administratively under British and Pakistani rule into the districts of Hazara, Peshawar, Mardan, Kohat, Bannu, and Dera Ismail Khan (14,290 sq. m.); and the rugged tribal country north and west of them (24,980 sq. m.) formed the agencies (N. to S.) of Malakand, Khyber Kurram, North Waziristan, South Waziristan, subject only to political control by the

governor. The small states of Amb and Phulera came under direct control of the governor in 1950. Total area, 39,270 sq. m. The pop. at the census of 1951 was 5,899,905, two-fifths in the tribal areas.

**North-West Highway System.** Name given to the Canadian section (1,257 m.) of the Alaska Highway (*q.v.*).

**North-West Mounted Police, ROYAL.** Name formerly held by the special force of police keeping order in the sparsely populated parts of Canada. In 1919 it was merged in the new Canadian Mounted Police (*q.v.*).

**North-West Passage.** Name for a sea route N. of America once believed to afford a short cut to China. The search for it over four centuries belongs to the romance of exploration, and has supplied stirring stories of endeavour. Pioneers in the quest, which began with the rediscovery of America by John Cabot in 1497, were John Rut (1527), Willoughby and Chancellor (1553), Frobisher (1576), Davis (1585), Barents (1594-96), Hudson (1607-10), Baffin (1612). In the 19th century the search was renewed by the Royal Navy with the expeditions of Parry (1819-

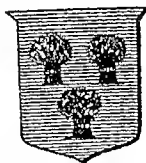


21), Beechey (1826), Ross (1829), and Franklin (1845). The passage was finally discovered by McClure 1850-53, though not traversed by him entirely by water; this was accomplished in 1903-05 by Amundsen, the Norwegian Arctic explorer. His record has since been twice broken by Capt. Larsen in the Royal Canadian Mounted Police schooner *St. Roch* which, on Arctic patrol duty, made the passage from W. to E. in 1940-42 and E. to W. in 86 days in 1944.

**North-West Territories.** Dist. of the dominion of Canada. Its total area is 1,309,682 sq. m., and

**Northwich.** Urban district and market town of Cheshire, England. It stands at the junction of the rivers Dane and Weaver, and is connected by rly. with Chester, 18 m. to W.S.W.

There are narrow cobbled streets and old houses, many of which have suffered from subsidence by the working of rock salt mines. These and its brine springs have long given fame to Northwich—its name means the



Northwich arms

northerly salt town—but a chemical industry has supplanted the older trades. The history of the manor begins in 1483; the present urb. dist. dates from 1875. It gives its name to a co. constituency. Interesting are S. Helen's church (c. 1400), Brunner library, Victoria infirmary, and brine baths. The

Weaver is here navigable. Market days Friday and Saturday. Pop. (1951) 17,489.

**Northwood.** Residential dist. of Middlesex, England. It is 14 m. N.W. of London by rly., pleasantly situated in wooded country between Pinner and Rickmansworth. With Eastcote, Ruislip, and S. Ruislip it forms part of the urban dist. of Ruislip-Northwood. The parish church of Holy Trinity, 1854, is of flint, with a red tiled roof; in the churchyard are the graves of Sir R. Morier and the 1st Lord Ebury. The church of Emmanuel is modern. On Kewferry Hill is Mount Vernon hospital and Cancer research institute. There is also a war memorial hospital. Golf courses lie near. The urban dist. was the first in the country to be governed by an operative town-planning scheme.

**Norton, CHARLES BOWYER ADDERLEY, 1st BARON (1814-1905).** Born Aug. 2, 1814, and educated at Christ Church, Oxford, he inherited large estates in Warwickshire and Staffordshire from a great-uncle in 1826. Adderley was M.P. for Staffs from 1841 until in 1878 he was created Baron Norton. He was under-secretary for the colonies, 1866-68, and president of the board of trade, 1874-78.

He died March 28, 1905. He took a keen interest in educational and colonial questions, and was a pioneer of town planning.

**Norton, CAROLINE ELIZABETH SARAH (1808-77).** British writer and publicist. Born in London, 2nd daughter of Tom Sheridan, and a grand-daughter of R. B. Sheridan, she was one of three beautiful sisters; the others became Lady Dufferin (q.v.) and duchess of Somerset. Caroline's husband, George Chapple Norton, whom she married in 1827, brought, and lost, an action against Lord Melbourne, 1836, alleging alienation of her affections. She left him; and further proceedings arising out of disputes on pecuniary matters instituted by her husband in 1853 moved Mrs. Norton to write a pamphlet, *English Laws for Women*. Of her earlier pamphlets, *A Voice from the Factories*, 1836, condemned child labour; *A Plain Letter to the Lord Chancellor* helped in the passing of an act, 1839, giving a woman separated from her husband the right to apply for access to her children. Her husband died in 1875, and in 1877 she married Sir William Stirling-Maxwell, but died June 15 that year. Among her novels are *Stuart of Dunleath*, 1851; *Old Sir Douglas*, 1868. She also wrote poetry. See *Diana of the Crossways*.



Caroline Norton, British writer  
After J. Heyter

**Norton, CHARLES ELIOT (1827-1908).** American scholar. Born at Cambridge, Mass., Nov. 16, 1827, he was educated at Harvard, and engaged for a time in business, voyaging to the East Indies in 1849. In 1853 he published an attack on experimental Socialism. During 1864-68 he was joint editor with Lowell of *The North American Review*. He was professor of fine arts at Harvard, 1875-1900. A powerful cultural influence was exerted by his *New Life of Dante*, 1859; *Notes of Travel and Study in Italy*, 1860; *History of Ancient Art*, 1891. He died Oct. 21, 1908.

**Norton-Radstock.** Urban district of Somerset, England. See *Midsomer Norton*; *Radstock*.

**Norton Sound.** Inlet of Bering Sea, Alaska. It lies S. of Seward Peninsula and is 100 m. across and 150 m. long. On the N. shore are Norton Bay and Godolphin Bay.



Northwich. Old half-timbered houses and shops in this centre of the mid-Cheshire chemical industry

it includes, save for Yukon and a section of Quebec, all that part of Canada lying above 60° N. which was formerly divided between Keewatin, Rupert's Land, and the North-Western Territory. It has three divisions, Franklin, Keewatin, and Mackenzie. The chief rivers are the Mackenzie, Slave, Great Fish, and Coppermine, and there are a number of lakes, Great Bear and Great Slave being the largest. Fur-bearing animals abound, and in parts the musk ox and the caribou are found.

The territories are now governed by a commissioner, his deputy, and a council of five members, and are watched over by the Royal Canadian Mounted Police. There is no capital, affairs being directed from Ottawa. Gold, silver, radium, uranium, and petroleum are worked, and some of the better land is under wheat, oats, and barley. Elsewhere only small trees, mosses, lichens, etc., are found. The territories are the remains of the vast area purchased from the Hudson Bay Co. by the dominion in 1869. Various parts were subsequently taken away to form the new provinces of Alberta and Saskatchewan and to increase the area of the older ones, chiefly Ontario and Quebec. Pop. (1951) 16,004.

## NORWAY AND ITS HISTORY

William Warbey, Chief English Press Officer to the Royal Norwegian Government, 1941-45

*The physical features, constitution, and history of the old Viking country of Scandinavia are here described. An account of the Second Great War in Norway follows. See also Denmark; Narvik; Oslo; Sweden, etc.*



Norway arms

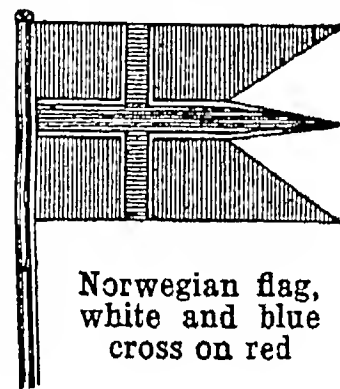
Norway occupies the W. and N. parts of the Scandinavian pen. It extends from lat. 57° 17' N. to lat. 71° 11' N., and is bounded S. by the Skagerrak, W. by the North Sea and Atlantic Ocean, N. by the Arctic Ocean, and E. by the U.S.S.R., Finland, and Sweden. The land area of Norway is 124,556 sq. m., and the country has a total length of 1,100 m., and a width varying from 8 to 250 m. The coast-line, measured as an unbroken line, is 1,700 m., but including every inlet, fjord, and larger island is 12,000 m. Spitsbergen, Bear I., and Jan Mayen Is. in the Arctic, Bouvet I., Peter 1st I. in the Antarctic, and the Antarctic continent between the Falkland Is. dependency and the Australian dependency are Norwegian possessions.

The greater part of Norway consists of lofty mountain ranges and plateaux of ancient igneous rock, with an average height of 1,600 ft. The greatest range is Kjölen (the Keel), running N. and S. and forming the natural frontier with Sweden. Its highest peaks in Norway are Sulitelma (6,180 ft.) and Jaekkevare (5,950 ft.). The main watersheds of S. Norway are the Dovre and Long Mountains, the highest peaks being Galdhöppigen (8,399 ft.) and Glittertind (8,350 ft.) in Jotunheimen, and Snöhetta (7,615 ft.) in Dovrefjeld. The only low-lying areas are around the Oslo and Trondhjem fjords and in the extreme S.E. The plateaux are, however, broken up by numerous valleys, such as the Gudbrandsdal and Østerdal, which offer means of communication by road and rail. The whole of the W. and N. coast from Stavanger to the Russian frontier is deeply indented by long branching fjords, and fringed with islands and rocks called the Skærgård (skerries), which provide a sheltered waterway for the coastal steamers that are the principal means of communication in the W.

The S. coast is less indented, but the great Oslo fjord leading

into the heart of S.E. Norway is the main means of access to the country. Long narrow lakes are numerous, the largest being Mjøsa, 140 sq. m. in area. The rivers, apart from the Glomma (375 m. long), are short and turbulent, with high waterfalls, up to 850 ft., which are an abundant source of hydro-electric power. The whole country was once heavily glaciated, but now the glaciers cover fewer than 2,000 sq. m. and are diminishing every year. The largest are Jostedalbreen (580 sq. m.), W. of Jotunheimen, and Svartisen, near the Arctic circle.

The climate, under the influence of the Gulf stream and the prevailing S.W. winds, is temperate but stormy and wet in the W. and N., while the S.E. has short, hot summers and long, cold but calm winters. All ports are permanently ice-free,



Norwegian flag, white and blue cross on red

though ice-breakers sometimes have to be used in the Oslo fjord. Mean Jan. temps. are: Oslo 22·3° F., Vardö on the Arctic ocean 22·1° F., Bergen 34·5° F.; July temps.: Oslo 62·2° F., Vardö 47·7° F., Bergen 57·4° F. Rainfall is high in the W., Bergen averaging 73 ins. p.a., and low in the E. (Oslo 26 ins.)

One quarter of the area of Norway is covered by forests, mainly coniferous, but with a sprinkling of deciduous trees on the lower slopes. N. of the Arctic circle the only trees are birch and dwarf willows. On the high ground of the interior above 3,000 ft. in the S. and above 1,600 ft. in the N., and on the coasts of Finnmark, Alpine vegetation and tundra prevail. Bilberries and whortleberries are plentiful in the forest areas. The principal wild animals in S. Norway are the fox, beaver, badger, stoat, weasel, elk, and roe-deer. The wolf is found in the dist. between Røros and Finnmark, the reindeer, Arctic fox, ptarmigan, and lemming in the Arctic and high mt. regions. Bird life is abundant. Salmon

and trout are common in the rivers of the W. and N., trout in the high lakes, and perch, pike, and grayling sporadically. Herring and codfish abound off the W. coast and mackerel in the S. Seals and several kinds of finner whale are also found.

**CONSTITUTION.** Norway has a written constitution, enacted in 1814 (since amended). It has a limited hereditary monarchy. The executive power is nominally vested in the king, who exercises his authority through a state council composed of the prime minister and not less than seven other members. The legislative power is exercised by the *storting* of 150 members elected directly for four years by all Norwegian men and women over the age of 21. The *storting* automatically assembles each year on the first week-day after Jan. 10. The *storting* elects one quarter of its members to form the *lagting*, the remainder constituting the *odelsting*. The *odelsting* originates bills and passes them to the *lagting*, which may approve a bill or send it back with comments. A bill twice rejected by the *lagting* is submitted to a joint session of the two *tings*, when a two-thirds majority is required to pass it. Budgetary and administrative matters are dealt with by the *storting* as a whole. The king has a right of veto, rarely exercised.

Norway is divided into 67 urban and 695 rural municipalities with popularly elected councils. They are entitled to levy a municipal income tax and are responsible for over one-third of the total public expenditure. The chairmen of all the rural municipalities in a *fylke* (county), of which there are 18, meet to form a *fylkesting*, before which the *fylkesmann*, appointed by the crown, presents the views of the central govt.

**POPULATION, RELIGION, EDUCATION.** Most Norwegians are of Nordic type, with an admixture of an aboriginal stock of Alpine type, and are tall, blond, and blue-eyed. The Lapps, of whom there are about 20,000 in N. Norway, probably came from central Asia. The pop. at the 1950 census was 3,278,546, a million more than in 1890. During the 19th century and the early part of the 20th century there was extensive emigration to the U.S.A. and Canada, the peak being reached in 1882 when 28,804 persons emigrated.

The established religion is Evangelical Lutheran; 97 p.c. of



the pop. adhere to it. There are about 60,000 dissenters, including 3,000 R.C.s. During the German occupation of Norway in the Second Great War the Germans expelled and killed most of the 1,400 Jews, but in 1947 the govt. offered facilities to Jews to enter the country up to their pre-war number. The king is the head of the church and appoints the seven bishops, the deans, and the lower clergy. Primary school education, compulsory and free from seven to 14 years of age, is of a high standard. This is followed by a comprehensive system of further education at very low fees, with generous maintenance grants. There is a university at Oslo, founded 1811, and another at Bergen, opened 1948; a technical college of university rank at Trondheim, and technical high schools for agriculture, dentistry, and commerce. There are also people's colleges providing short-term courses for young people and adults. The Bergen meteorological research school has played a leading part in the development of current methods of observation and analysis. The press flourishes, and even small towns publish their own daily newspapers.

**NATIONAL DEFENCE.** A large part of Norway's small navy was sunk during the Second Great War; most of the post-war navy, consisting of seven destroyers, five torpedo boats, five submarines, three corvettes, and a number of smaller vessels, was purchased from the U.K. The complement in 1946 was 8,000 officers and men. The air force was equipped with Mosquitos, Catalinas, and Spitfires. Just over 23,000 men are called up each year for 12 months' military training; the total in the three services on Feb. 1, 1947, was 34,442.

**INDUSTRY AND TRADE.** Until the 1890s Norway was predominantly an agricultural country, but the adaptation of water power to the generation of electricity led to an industrial revolution. In 1930, 37 p.c. of the pop. were engaged in agriculture, forestry, and fishing, 31 p.c. in industry and crafts, 21 p.c. in trade, transport, and shipping.

Agriculture is rendered difficult by the geographical configuration of the country. Only 3 p.c. of the area, a smaller proportion than in any other country of W. Europe, is arable, although the area under cultivation has increased steadily in each year. Norway is self-

sufficient in potatoes and dairy products, but only two-fifths of her cereal requirements are grown at home, chiefly in the form of oats and barley. In 1945 livestock included 1½ million cattle, nearly a million sheep, 171,723 pigs, 141,628 goats (pre-war figures were 1½ million cattle, 1·7 million sheep, 362,000 pigs, 249,000 goats).

In N. Norway 130,000 reindeer provide the Lapps with draught animals and, in emergencies, food. Fur production, mostly from foxes, expanded between the two Great Wars. In 1939 Norway had 493,000 silver foxes, reduced in 1945 to 66,469. The Norwegian forests, which produce about 15·5 million cu. yds. of timber annually, provide the basis for important sawn timber, furniture, wood pulp, cellulose, and paper industries.

#### The Norwegian Fisheries

The Norwegian fisheries are the largest in Europe, with an annual catch of well over a million tons; cod and herring are the most important, the centres of the former being the Lofoten Is. and Finnmark, while herring are caught along the W. coast of S. Norway. Most of the cod is exported, unsalted as stockfish, or salted and dried as klipfish. The annual yield of cod liver oil is more than three million gallons. The bulk of the herring catch is used to provide herring-oil for margarine, etc.

Sprats and brislings are canned for export at the canning factories in Stavanger. Whaling is no longer carried on in Norwegian waters, but Norwegian whaling expeditions were the first to exploit the Antarctic fields, and have maintained a leading position despite severe war losses. The 1938-39 season produced 735,000 barrels of oil, valued at £1,895,000; the 1946-47 season 937,319 barrels, valued at £13,500,000.

Norway has no coal, except in Spitsbergen, where the mines produced over 300,000 tons annually before the Second Great War. Low-grade iron ores are plentiful, and about a million tons a year are produced from the mines at Kirkenes in N. Norway and near Kragerö and Arendal in the S. Norway is the world's largest producer of sulphur pyrites, with an annual output of over a million tons. Copper ore is worked at Röros, Sulitelma, and silver is mined at Kongsberg. Other minerals are molybdenum, nickel, chromium, titanium, and graphite.

Output of hydro-electric power is 1·4 million "all the year" kW.,

but resources are sufficient to provide nearly seven times as much. In 1937 the power produced in Norway averaged 3,189 kWh. per inhabitant, compared with 622 kWh. in Great Britain. The most important manufactures are electro-chemical and electro-metallurgical. Nitrates, of which the annual output is 600,000 tons, are produced at Rjukan, Odda, and near other waterfalls. Other important chemical products are carbide and cyanamide. The production of aluminium was expanded during the Second Great War from 29,000 to over 40,000 tons p.a. Ferro-alloys are an important group, and electric iron-smelting has been developed. In 1947 the construction of electric steel furnaces was started at Mo in Rana. Pre-war output of mechanical and chemical pulp reached nearly 1·5 million tons. The textile and clothing industries developed considerably between the two wars, as did the processing of foodstuffs. Shipbuilding is carried on in Oslo and Bergen, but the yards are small and most of the larger Norwegian merchant ships are built in British, Swedish, or Danish yards.

#### Balance of Trade

The principal exports are fresh, dried, and canned fish, fish oil, paper and pulp, ores, nitrates, iron and other metal alloys, aluminium, zinc, copper, carbide, and furs. Swedish iron ore is exported through Narvik. Norway normally spends one-third of her national income on imports, chiefly foodstuffs and fodder, coal, machinery, and ships. A favourable balance of trade has normally been assured through the earnings of the Norwegian merchant fleet, which, at 4,835,000 gross tons in 1939, was the fourth largest in the world. More than half the ships were less than 10 years old, there were 675 motorships, and tankers of an aggregate tonnage of 2·1 million tons. Most of these vessels were engaged in the tramp trade, but there were lines to all parts of the world. Nearly one-half was lost in the Second Great War, but by July, 1947, it had been built up again to 3,663,000 g.r.t.

Except in the far N., roads are good and adequate. The Arctic Highway, from Narvik to Kirkenes, is kept open for most of the winter with the aid of snow-shields and snow-ploughs. The coast towns are linked by regular services of coastal steamers. Rly. lines, most of them electrified, link Oslo with Bergen, Stavanger,

Trondhjem, and Bodö, and four lines run into Sweden. A line links Narvik with the Swedish iron mines and there is a short local line at Kirkenes. Norway has airports at Sola, near Stavanger, and at Oslo; internal airlines connect the principal towns, and there are services to Sweden, Denmark, the Netherlands, France, and the U.K.

**LANGUAGE, LITERATURE, ART.** The Norwegian language, like Danish and Swedish, belongs to the Germanic language group. During the period of Danish rule, from 1397 to 1814, Danish, spoken with a distinctive accent, gained precedence over the Norwegian language amongst the official classes and in literature. In the 19th century ardent Norwegian patriots evolved a literary form from the Norwegian peasant dialects, to which they gave the name *landsmål* (later officially called neo-Norwegian), in opposition to the near-Danish *riksmål*. A violent language conflict developed, and official attempts to fuse the two languages by reforms in orthography, grammar, and pronunciation have not completely succeeded. A modified *riksmål* is used in the towns and in most of the press and official publications, but the *landsmål* is used by many writers and in the schools of W. Norway and the rural areas.

#### Norwegian Literature

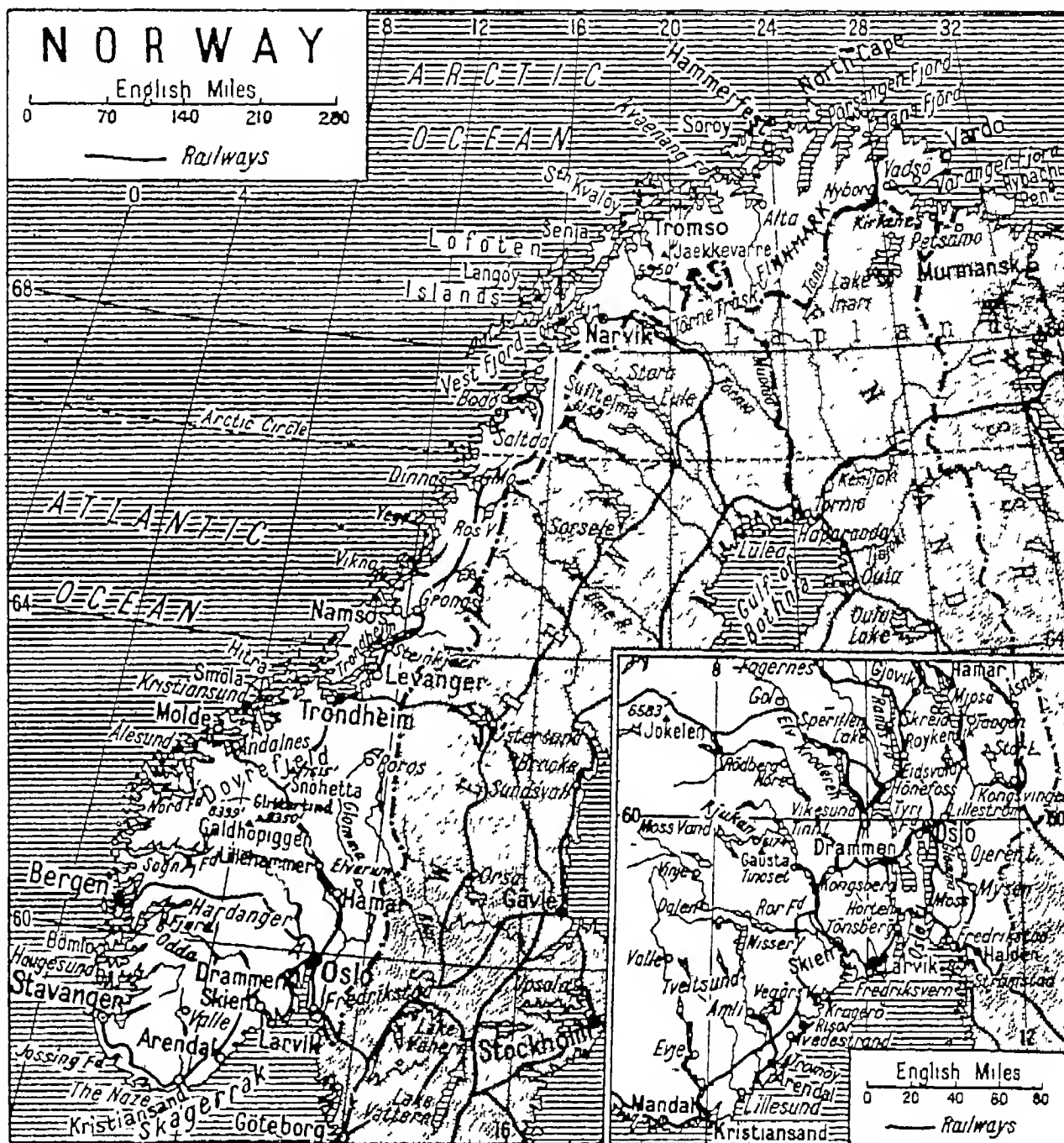
Old Norse literature, which flourished from the 9th to the 13th century, found its richest expression in the Icelandic sagas. The Norwegian court was a centre of scaldic poetry. During the period of Danish rule there was little distinctive Norwegian literature, apart from the satirical comedies of Holberg, who lived in Denmark, and the nature poems of the 17th century clergyman Peter Dass. The early 19th century saw a great revival, headed by the champions of national independence: the poets H. Wergeland and J. Welhaven, the language reformer Ivar Aasen, and the numerous collectors of folk poetry and music. In the latter half of the 19th century there came the literary giants, Henrik Ibsen (1828-1906) who, after writing historical plays, founded the drama of social criticism, and Bjørnstjerne Bjørnson (1832-1910) who wrote novels and plays and championed the national independence movements of the Norwegians, the Czechs, and the Poles. Associated with these two were the poets

J. Lie (1833-1908) and A. Kielland (1849-1906). The 20th century has produced the novelists Knut Hamsun (b. 1859), Sigrid Undset (b. 1882), Olav Duun (b. 1876), and J. Bojer (b. 1872), the dramatists G. Heiberg (1857-1929) and Helge Krog (b. 1889), and the poets O. Bull (1883-1933), A. Överland (b. 1889), and Nordahl Grieg (1902-43).

Norwegian musicians include Edvard Grieg (1843-1907), who derived much of his inspiration from Norwegian folk-tunes, C. Sinding (b. 1856), and J. Svendsen (1840-1911). Besides many

N. America on one of his voyages c. 1000. Norway was brought under one king for the first time in 872 when Harald the Fair-haired defeated the other chieftains at the battle of Hafrsfjord. At his death in 930 strife ensued between his sons and grandsons, but the kingdom was consolidated by his descendants Olav Trygvasson and Olav Haraldson (1016-1030), who introduced Christianity and was canonised after his death.

During the 11th century the crown, the church, and the nobility became firmly established. Many of the freeholding peasants



Norway. Map of the kingdom in western Scandinavia. Inset, environs of Oslo, the most populous area of the country

competent minor painters, Norway produced the leading exponent of expressionism and social-minded realism, Edvard Munch (1863-1944). Her leading sculptor is Gustav Vigeland, whose vast Park of Sculpture in Oslo took nearly 40 years to complete.

**HISTORY.** Norway was settled by men of Nordic type before the second millennium B.C. and that stock has since remained undisturbed. During the Viking period (800-1050) Norwegians established settlements in N. France (Normandy), Ireland, W. Scotland, the Isle of Man, and Northumbria, and colonised Iceland, Greenland, and the Faroe Is. Leif Ericsson probably reached

became tenant-farmers, but serfdom was never established. In the 12th century Hanseatic merchants settled in Bergen and obtained a firm grip on Norwegian commerce. The 13th century saw the peak of Norwegian power as an Atlantic empire, with both Iceland and Greenland acknowledging Norwegian suzerainty. The first setback came, however, with the defeat of Haakon IV by Alexander III of Scotland at the battle of Largs in 1263. As a result Haakon's son, Magnus VI, who earned the title Lawmender by codifying the provincial laws into a national civil code, abandoned Norwegian claims to Caithness and the Hebrides.



During the 14th century Norway was successively united, in consequence of royal marriages, with Sweden and Denmark, and in 1397 the three kingdoms were brought together in the union of Kalmar by Queen Margareta. Sweden broke away in 1449, but Norway remained under the autocratic rule of Danish kings until 1814. In 1496 the Orkneys and Shetlands were lost to Norway, in 1536 the Reformation was introduced by decree of the Danish state council, and in 1658 Norway lost three E. provs. to Sweden.

During the 17th and 18th centuries there was a revival of economic prosperity, and towards the end of the 18th, particularly after the French Revolution, a strong movement for national independence and democratic institutions began to develop. In 1814 the Swedish crown prince, Charles John, formerly Marshal Bernadotte of France, was persuaded by Tsar Alexander I to join the allied coalition against Napoleon, and to abandon the Swedish claim to Finland in return for Russian and British support of his plan to take Norway from Denmark, which had been forced on to Napoleon's side. After the defeat of Napoleon at Leipzig, Frederick VI of Denmark signed the treaty of Kiel, by which he surrendered his sovereign rights over Norway to Charles XIII of Sweden, but retained Iceland, Greenland, and the Faroes. The Norwegians objected to being treated as chattels, however, and persuaded the Danish *stadtholder*, Christian Frederick, to convoke a constituent assembly at Eidsvold.

#### Struggle for Independence

Meeting here from April 10 to May 17, the delegates asserted the independence of Norway, offered the crown to Christian Frederick, and drew up an advanced democratic constitution. Sweden invaded Norway to assert her rights, the powers intervened in support of Sweden, and an armistice was signed after 17 days. The *storting* met again and sanctioned the union with Sweden, but managed to secure the Swedish king's acceptance of their new constitution. As the century advanced a struggle developed between the Norwegian parliament and the Swedish king, who reserved the right to appoint and dismiss ministers at his pleasure. In 1882 the Norwegian Liberals, under Johan Sverdrup (1816-1892), took up the fight for parl. govt., and in 1884 Oscar II consented

to the formation of a Liberal govt. based upon a parl. majority. In the last quarter of the 19th century the Norwegian merchant navy leapt to the fore, and Norway acquired world-wide commercial interests which, it was felt, could not be adequately represented by a Swedish consular service. This provided a new motive for complete independence, and on June 7, 1905, the Norwegian *storting* voted for severance from Sweden. A plebiscite resulted in an overwhelming vote for a monarchical form of government, and on Nov. 18, 1905, Prince Charles of Denmark was formally elected king of Norway. He took the title of Haakon VII.

#### Twentieth-Century Progress

The period from 1880 to 1914 was one of swift economic development, which brought thousands of peasants' sons to the towns, and led to the birth of a Labour party (1887) and a centralised trade union movement (1899). Social reform came under the Liberal govts. of 1905-20, including the first Health Insurance Acts (1909 and 1915), measures for maternity and child welfare, a new Factory Act and an Eight-hour Day Act (1919). During the First Great War Norway was neutral, but half her merchant fleet, which plied chiefly in the service of the Allies, was sunk by German U-boats. Economic depression followed that war, and increasing social tension. For a time the Norwegian Labour party was affiliated to the Communist International, but it seceded in 1923. At the 1933 elections it was returned as the largest party in the *storting* and in 1935 a Labour govt. was formed which relied for its parl. majority sometimes on the Liberals and sometimes on the Agrarians. Up to the German invasion in 1940 it introduced fresh social reforms, including measures for old age pensions (1936), unemployment insurance (1938), and improved housing.

SECOND GREAT WAR. Efforts to form a Scandinavian neutral bloc broke down when Denmark was compelled, in 1939, to sign a non-aggression pact with Germany. When Hitler invaded Poland Norway declared her neutrality and took measures to strengthen her defences and lay in stocks of food and petrol. In the autumn of 1939 the Norwegian ship-owners' association signed an agreement with the British govt. promising to keep on charter to

the Allies the same tonnage of shipping as was normally used by them in peace-time. German attacks on Norwegian shipping during the seven months of Norwegian neutrality caused the loss of 377 lives and 54 merchant ships. At the same time German use of Norwegian territorial waters to evade the British sea blockade led to many controversies with the western powers, and on Feb. 16, 1940, a British naval party boarded the German vessel *Altmark* (*q.v.*) while it lay in the Jössing fjord. Further incidents led to a British announcement on April 8, 1940, that mines would be laid in Norwegian waters. A few days before, Hitler had given final orders for the invasion of Norway and Denmark. On April 5 a fleet of troopships left Stettin for Norway, and on April 6 nine German destroyers left Bremen for Narvik. At 11.30 p.m. that day German warships, led by the 10,000-ton cruiser *Blücher*, sailed up the Oslo fjord and engaged the fortifications. A whaling boat and a small minelayer, which engaged the invading fleet, were sunk. Fort Iskarsborg, defending the narrow entrance to the inner fjord, opened fire and sank the *Blücher*, which was carrying the nucleus of the German police and civil administration.

#### The Nazi Invasion of 1940

Early in the morning of April 9 German airborne troops were landed at the Oslo airport at Fornebu, and quickly surrounded the capital. Meanwhile, the Norwegian cabinet had met, had rejected a German ultimatum to surrender, and had made arrangements to evacuate from the capital the royal family, the govt., and the civil administration. The *storting* was summoned, and met at Hamar, 100 m. N. of Oslo, the same afternoon, later moving on to Elverum to evade the pursuit of German forces. At these sessions full powers to carry on the fight, if necessary from abroad, were given to a new govt., still predominantly Labour in composition, but including representatives of the other political parties. In the capital Major Vidkun Quisling, leader of the tiny fascist National Union party, entered the radio station, and broadcast a statement that he had formed a govt. and had cancelled the mobilisation orders issued by the Norwegian general staff. Quisling's broadcast created some confusion for a few days, but when it became known that

Haakon and the real govt. were continuing the fight, most Norwegians quickly rallied round their leaders. On April 10 the German minister in Oslo presented to Haakon a demand that he should appoint Quisling as prime minister. The king indignantly refused, and nothing more was heard of Quisling until after the fighting in Norway was over.

#### The Fighting in Norway

Norwegian military resistance lasted for 62 days, against hopeless odds. In the first day all the main ports—Oslo, Stavanger, Bergen, Kristiansand, Trondhjem, and Narvik—had been captured by German warships, in most cases after heroic but futile resistance by small Norwegian forces. Airfields and military depots were seized by airborne troops. Except around Narvik, there was no organized front and resistance was mainly of a guerrilla character. The Allies promised support, and British, French, and Polish troops were landed. The British forces suffered from lack of suitable equipment, and from the fact that the best ports were in German hands. An attempt to hold the line of the Gudbrandsdal, from Åndalsnes to Lillehammer, failed, as did a move round the Trondhjem fjord, via Namsos and Steinkjaer. Only in the far North were successes recorded. In two engagements, on April 10 and 13, British naval forces sank all the nine German destroyers lying in the Ofoten fjord off Narvik. On May 26 Narvik itself was recaptured after a combined assault by Norwegian, French, and Polish troops, aided by British warships. A few days later, however, the Allies, owing to the menacing developments in France, decided to evacuate their forces from Norway, and the Norwegian forces themselves capitulated on June 9. Two days before, Haakon and the govt. left Tromsø for the U.K., in the cruiser Devonshire, after issuing a proclamation stating that they intended to continue the fight from outside Norway's frontiers. Norwegian losses in the two months' campaign totalled 2,000 men, over 20 small warships, and the whole of the small fleet of battle planes. The Germans lost more than 60,000 men, mostly drowned in troopships, and 21 warships totalling more than 50,000 tons.

The exiled govt. established itself in London, remaining there until the end of the war. Through the Norwegian shipping and trade

mission it organized the participation of 4,000,000 tons of Norwegian merchant shipping in the Allied war effort. Forty per cent of the oil and a large part of the food and munitions brought to Great Britain during the period before the U.S.A. entered the war were carried in Norwegian vessels. A new Norwegian army, recruited from all over the world and from young men who made daring escapes from Norway, was trained in Scotland. British, and later U.S., vessels were lent to create a new Norwegian navy which saw active service in convoy and patrol work. Norwegian airmen were trained in Canada, and gradually a new air force, consisting of two fighter squadrons and one seaplane squadron, was built up. Norwegian pilots, soldiers, and sailors also served in British units. The Norwegian govt. covered its own war expenses, chiefly through the earnings of the merchant fleet, which it requisitioned on April 22, 1940. In May, 1942, a small Norwegian force reoccupied Spitsbergen (which had been evacuated by the Allies in Sept., 1941), and set up a meteorological station there. They were attacked by German naval and air forces, but were eventually relieved from the air. A small Norwegian force also maintained a meteorological station on Jan Mayen I., in the Arctic. From time to time Norwegian forces participated in daring raids on the Norwegian coast, including one on Lofoten Is., from which over 300 Norwegian civilians were evacuated to Britain.

#### The Quisling Government

These raids brought encouragement to the Norwegian home front, which was passively resisting the invaders and the "quislings." After the Norwegian capitulation in June, 1940, there was a period of confusion and despondency, rendered worse by the defeat of France and the threatening battle of Britain. The German Reichskommissar, Josef Terboven, used this period to press a few prominent Norwegians, including members of the *storting*, to call upon Haakon to abdicate, and the govt. in London to resign. The king and the govt. rejected the proposal as unworthy and unconstitutional, and Terboven, after a further period of fruitless negotiations with Norwegian political leaders, resolved the situation in Nazi fashion by issuing a series of decrees. On Sept. 25, 1940, he declared the king and the exiled govt. deposed, dissolved all politi-

cal parties except Quisling's National Union, and appointed 13 Norwegians, either members of Quisling's party or pro-Germans, as acting councillors of state. This sham govt., which could act only with the approval of Terboven's own German administration, remained in "office" until the German capitulation in May, 1945. Despite repeated requests from Quisling, however, the Germans refused to sign a peace treaty with him.

#### Resistance to the Tyranny

The shock of the Terboven *diktat* of Sept. 25, 1940, brought home the meaning of Nazism to all Norwegians except the two p.c. or less who supported Quisling. From then on a ding-dong moral and political struggle was waged, with all sections of Norwegian society playing their part in turn. First to act were the members of the supreme court who resigned in a body in Dec., in protest against the Reichskommissar's interference with the independence of the Norwegian judiciary. In the same month the Norwegian sporting associations, with 300,000 members, refused to agree to the introduction of the *Führerprinzip* into their organizations, and started a strike which lasted throughout the occupation. During the same winter school strikes took place in Oslo, Bergen, and elsewhere after Quisling's storm-troopers, known as the Hird, had broken into several schools and maltreated teachers and children for their opposition to the Nazi "new order." In Feb., 1941, the seven bishops of Norway issued a pastoral letter roundly condemning the lawlessness of the Hird and the arbitrary acts of the Quisling "govt." This was the beginning of a long struggle in the course of which the Norwegian church, despite the deposition and confinement of the bishops and many of the clergy, repeatedly denounced the Nazi regime and called upon all Christians to resist its encroachments on religious and civil liberty.

On April 3, 1941, 22 Norwegian organizations combined to send a letter of protest to Terboven, concerning political interference with civil service appointments.

On May 15 a further letter was signed by 43 organizations, including the powerful T.U.C. In June the T.U.C. took up the struggle for the independence of the unions, and after a temporary concession the Reichskommissar struck hard on Sept. 10, declaring



a state of emergency in Oslo, executing two of the union leaders, arresting many others, and placing the unions in the hands of quisling "commissars." Despite this action, the Norwegian workers, led by the underground "free trade union movement," retained sufficient cohesion to defeat by mass opposition an attempt in Sept., 1942, to form a fascist "national assembly." The Norwegian teachers had their greatest trial in the same year, when they resigned in a body from the Nazi "teachers' front" set up by the quislings in Feb., 1942. In March 1,300 of them were arrested, and of these 650 were transported, in an old cargo vessel, to forced labour at the Arctic port of Kirkenes. They refused to give way, and the Germans were eventually compelled to release them.

Meanwhile an underground Home Front with a Home Army was gradually built up under the president of the supreme court, Paal Berg. At great risk, illegal news bulletins were distributed, wireless contact was maintained with Great Britain, patriots were smuggled over the frontier into Sweden, and in the later years of the war a special sabotage organization was built up which did great damage to German military supplies and communications. A successful Allied raid on the heavy water plant at Rjukan in Feb., 1943, was carried out with the aid of this organization.

On Oct. 25, 1944, Russian troops, pursuing the retreating Germans across Finland, entered the Norwegian port of Kirkenes, and advanced as far as the River Tana. Here they were held, and no more Norwegian territory was liberated until the surrender of Germany on May 8, 1945. On the night of May 7 the Norwegian Home Army emerged and took charge of the streets and main public buildings in Oslo. Three days later a govt. delegation, headed by Crown Prince Olav, arrived in the capital, and the Home Front placed itself under its authority. On May 31 the Norwegian govt. returned, amidst great public rejoicing, and three weeks later a new coalition govt., including two Communists, was formed under the premiership of Einar Gerhardsen, a former Labour mayor of Oslo, who had spent three years in a German concentration camp.

In Oct., 1945, a general election gave the Labour party for the

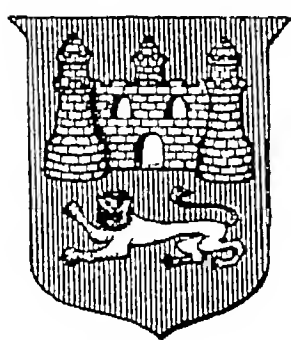
first time a clear majority, with 76 seats out of 150. Gerhardsen then formed a Labour administration to carry out a programme of reconstruction under vigorous state direction. Food, which had been extremely short during the occupation, rapidly increased in quantity, and within two years production and foreign trade indices were nearly back to pre-war levels. Democratic institutions, destroyed by the Nazis, were fully restored, the leading quislings were tried, and Quisling himself was executed, Oct. 24,

1945. The former foreign secretary of Norway, Trygve Lie, was secretary-general of the United Nations, 1946-53.

**Bibliography.** The Constitution of the Kingdom of Norway, H. L. Braekstad, 1905; Norway and its Treasures, 1914, A. Wayfarer in Norway, 1935, S. J. Beckett; The New Norway, O. B. Grimley, 1939; Hitler Attacks Norway, H. K. Lehmkuhl, 1943; Norway in World History, W. Keilhan, 1944; Norway: A Handbook Compiled by the Royal Norwegian Govt., 1944; Look to Norway, W. N. Warbey, 1946.

**Nor'-Wester.** Warm dry föhn wind which blows over the Canterbury Plains, E. of the mts. of the S. Island of New Zealand. It is the prevailing wind, which, having crossed the Southern Alps, to whose W. slopes it brings a heavy rainfall, descends to the E. plains, and in so doing is warmed by compression.

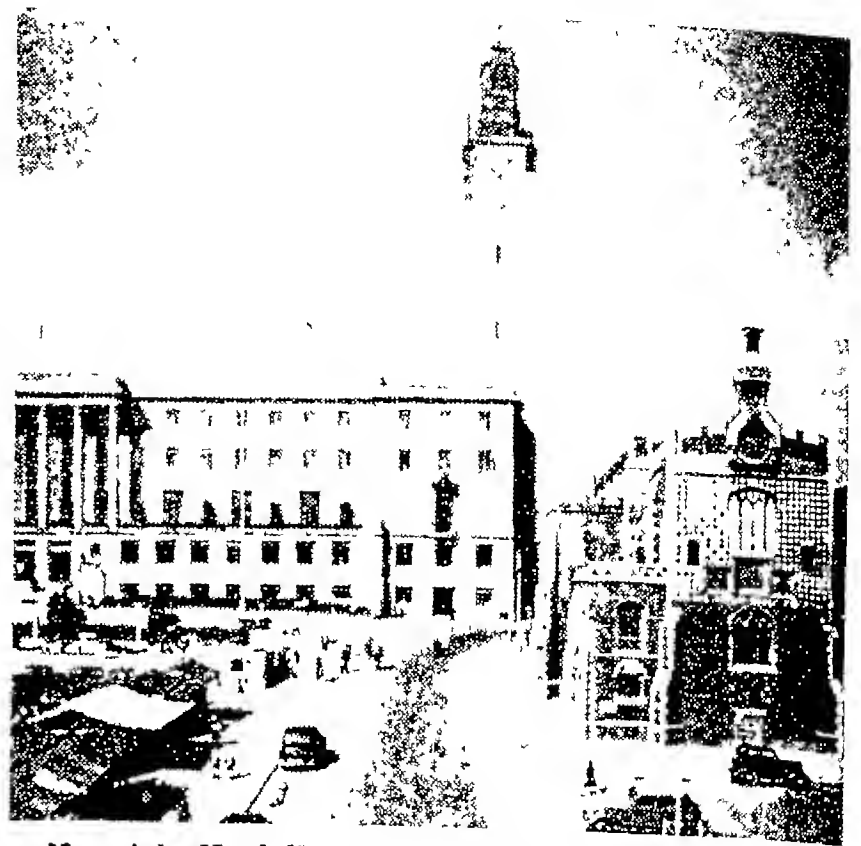
**Norwich.** City, co. bor., and co. town of Norfolk, England, also co. of itself. It stands on the



Norwich arms

Wensum, near its junction with the Yare, and is 114 m. N.E. of London. The city and environs are served by rly. and Eastern Counties buses. Its chief magistrate has been known since 1910 as the lord mayor.

The principal building is the cathedral of Holy Trinity, begun in Norman times, but not completed until about 1500. It displays several styles of architecture; features are the long and splendid nave, the lofty spire, and the two



Norwich, Norfolk. The City Hall in the Market Square; it was opened by King George VI in 1938. The ancient guildhall is seen on the right

Val Doone

apsidal chapels. Two old gateways lead to it, and near are the cloisters, bishop's palace, deanery, and other buildings connected with the foundation. Of the other churches, the chief are S. Peter Mancroft, a large and noble building, S. Michael-at-Coslany, S. Giles, S. Andrew, and S. Lawrence. S. John's R.C. church is modern.

The chief secular building is the City Hall. S. Andrew's Hall, originally the nave of a 15th-century monastic church, has proportions that make it a public hall of unusual magnificence. The guildhall was built in the 15th century. The grammar school was once a chapel. Other buildings include the shire hall, corn exchange, and a drill hall, and there are hospitals, libraries, a technical college, and a training college. Of the castle little more than the keep, dungeons, and battlements remain; it is now used as a museum and art gallery housing the most comprehensive collection in England of paintings of the Norwich school. Borrow's house is also a museum. The Maid's Head Hotel is a picturesque old building. Bishop Bridge of the 13th century is still used, and the Strangers' Hall dates from the 15th century. The charitable foundations include the old hospital of S. Giles. There is a theatre, and in 1921 a playhouse, near the site of one closed by Cromwell, was opened by the Norwich players as the Maddermarket Theatre; it is designed as were the theatres of Shakespeare's day, the first of its kind in the 20th cent.

The industries of Norwich include engineering works and the making of boots and shoes, crapes,

beer, starch, mustard, etc. There is a trade along the river, and the city is the business centre of a large district, remaining in a sense the capital of E. Anglia. It is h.q. of important insurance companies,

through the wool and worsted industry, one of the richest in England. Separately represented in parliament since 1298, it now forms two bor. constituencies. The pop. at the census of 1951 was 121,226.

**Norwich.** City of Connecticut, U.S.A., and co. seat of New London co. It stands on the Thames river, at the head of navigation, 49 m. S.E. of Hartford, and is served by rlys. and by steamers plying to New York and other ports. Norwich was settled in 1659, and received a city charter in 1784. Pop. (1950) 23,429.

**Norwich, SIR ALFRED DUFF COOPER,** 1st Viscount (1890-1954). British diplomatist. Nephew of the 1st duke of Fife. he went to Eton and New College, Oxford. Conservative M.P. for Oldham, 1924-29, he represented St. George's, Westminster, 1931-45. He acted as secretary for War, 1935-37, as first lord of the Admiralty,

1937-38, resigning through disagreement with the policy that led to the Munich agreement (*q.v.*). He was minister of Information, 1940-41, chancellor of the duchy of Lancaster, 1941-43, and, having represented the British government with the French committee of national liberation, was ambassador to France, 1944-47. K.C.M.G. 1948, he was in 1952 created Viscount Norwich. A writer of distinction, he pub. Talleyrand, 1932; Haig (2 vols.), 1935-36; Operation Heartbreak (a novel), 1950; Old Men Forget (autobiography), 1953. He married, 1919, Lady Diana Manners, third daughter of the 8th duke of Rutland; she published memoirs in 1958. Lord Norwich died at sea Jan. 1, 1954.

**Norwich Terrier.** Breed of small dog developed by Frank Jones of Norwich from various breeds of small rough terrier. It is hardy and low to ground; the skull is wide with a foxy muzzle:

the ears may be erect or dropped; the neck is short and strong, the body short and compact, the legs short and sturdy, the coat is hard, straight, and wiry, longer on neck and shoulders than elsewhere. This breed is not trimmed for the show ring. Colours: red, including wheaten red; black and tan; brindle. White patches are undesirable. Ideal weight, 11-12 lb.; ideal height 10 ins. at the withers.



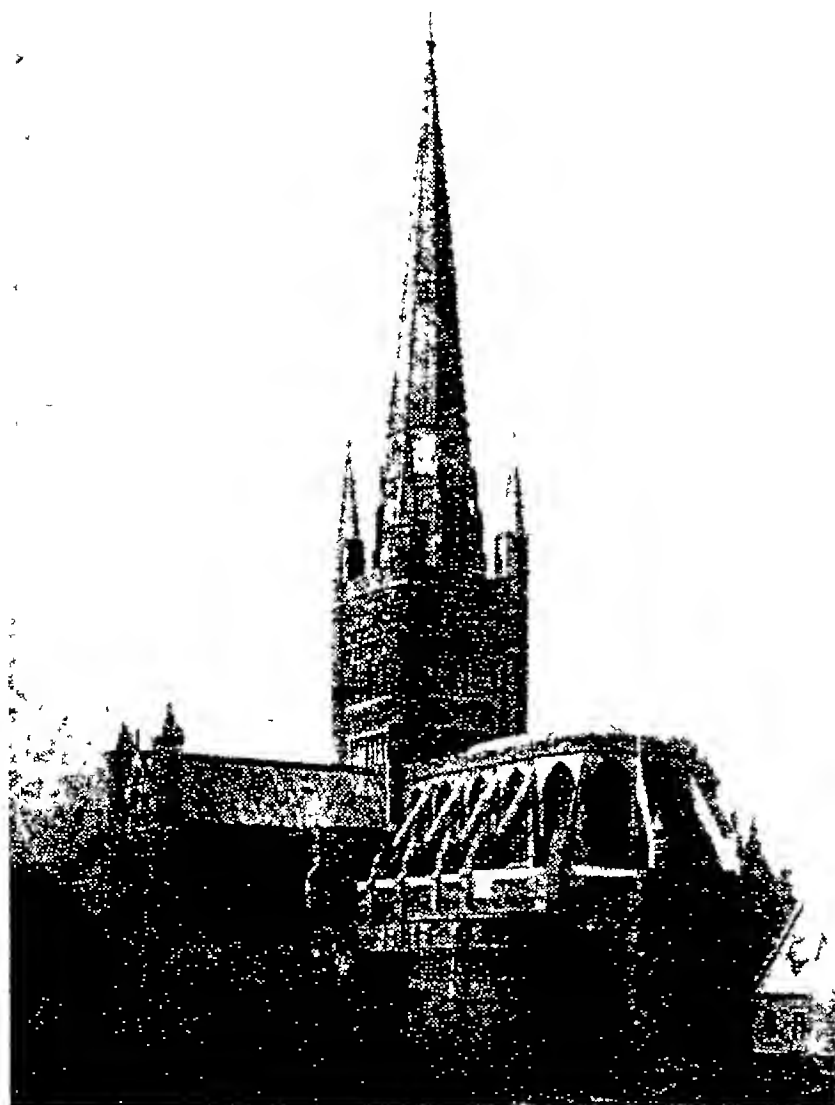
Norwich terrier

**Norwood.** Residential dist. of London, England, in S. Lambeth. At West Norwood is the S. Metropolitan cemetery of about 40 acres, founded in 1846. To the W. of it is the Jews' hospital, built 1863; it was founded at Mile End in 1806. Near Norwood Park, 33 acres, is the R.C. convent of Our Lady, with orphanage, founded in 1848. The royal normal college and academy of music for the blind was established at Upper Norwood in 1874. In the 17th century Norwood was covered by an oak wood.

**Norwood, FREDERICK WILLIAM** (1875-1958). British pastor. Born at Melbourne and educated at Ormond College there, he became in turn pastor of the Congregational churches at Brunswick, Victoria, and North Adelaide, South Australia. Minister of the City Temple, High Holborn, London, 1919-36, he then became an evangelist under the auspices of the National Free Church Council. He was a minister at Vancouver, Canada, 1939-43, at Montreal, 1943-47. He died at Hamilton, Ont., Feb. 14, 1958.

**Nose.** Organ of the sense of smell, also used in respiration. In human beings it forms a prominence, variable in size, situated in the middle line of the face. It ends below in the nostrils, entrances to the two nasal cavities between the base of the skull and the roof of the mouth.

The roof, sides, and floor of the cavities are formed of certain bones of the skull. The roof is composed of a bone perforated like a sieve to afford passage to the nerve of smell. The sides are each covered by three highly vascular bodies (the turbinates) which moisten and warm the air passing through. When swollen, these bodies give rise to a stuffiness of the nose experienced by everyone suffering



Norwich. Cathedral of Holy Trinity, from the south-east. Parts date from Norman times  
*Frith*

and was formerly a centre of banking. It has a large cattle market, and is noted for canaries. The borough includes Carrow, where there was a Benedictine abbey in the Middle Ages, and Thorpe. Mousehold Heath, the subject of a famous painting by Crome, is public property. Norwich is remarkable as a centre of literature and art and for the eminent persons associated with it; they include Sir Thomas Browne, Borrow, and Crome; Coke and Nelson, who received his early education here; the Martineaus, the Gurneys, and Edith Cavell. It was raided from the air by the Germans on April 27 and 29, 1942.

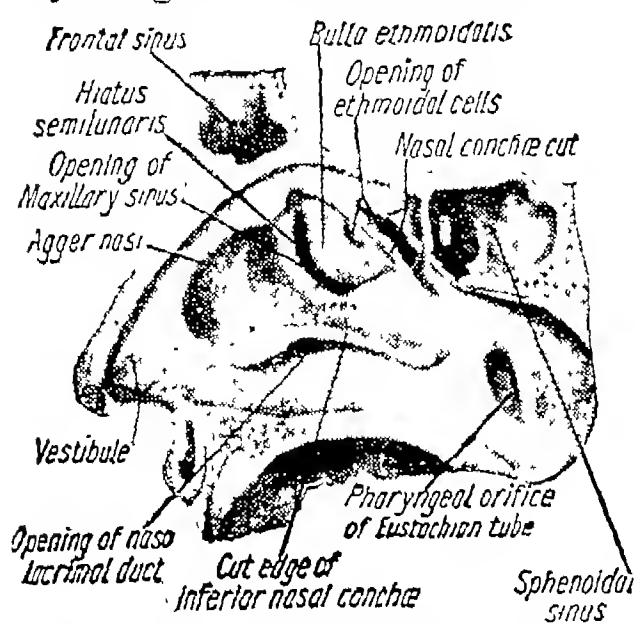
Norwich was founded by the Anglo-Saxon invaders of Britain, and in the 10th century or earlier was an important town. In 1094 the E. Anglian bishopric was brought here from Thetford, and about the same time the castle was built. Attached to the cathedral was a monastery. The citizens, growing rich, bought various charters giving them liberties and privileges, and walls were built round the city. In the 14th century a staple for wool was fixed here, and Flemings settled. Made a county of itself in 1404, the city became,



1st Viscount Norwich, British diplomatist



from a cold in the head. Several cavities are present in the bones adjoining the sides of the nose, and



**Nose.** Sectional diagram showing lateral wall and principal parts of the organ

open into it by small holes. These holes may become blocked by catarrh or infection, and severe headache can result. The pain is caused not by pressure resulting from blockage, but by the negative pressure caused by the absorption of the air normally present in the cavities, the sinuses, no more being able to enter. The condition is relieved by sprays and inhalations which shrink the mucous membrane. The floor runs straight back from the nostrils to the nasopharynx, parallel with the roof of the mouth. The two cavities are separated from one another by the septum, which is principally composed of cartilage.

The point of the nose is composed of cartilage covered by skin externally, and jointed to the bony framework of the rest of the nose, giving softness and mobility to the point. The nerve of smell breaks up into many branches, which end in the upper parts of the septum and sides of the nose. This region is therefore termed the olfactory region, or the part of the nose used for smelling. Often after acute diseases, especially influenza, this area may cease to function. The rest of the nose is supplied by nerves of common sensibility and is used for breathing. It is therefore termed the respiratory region of the nose.

The sense of smell varies much in different individuals, and in different animals. It is highly developed in herbivora and carnivora, the dog, for example, depending on the sense of smell almost as much as on sight. Taste and smell are intimately connected. Digestion is greatly assisted by the agreeable stimulation of both senses.

To avoid irritation of the throat and lungs all the air should be drawn through the nose in order

that it may be warmed and moistened and rendered harmless to these important organs. See Adenoids; Anatomy; Head; Man; Smell.

**Nosean** or **NOSFLITE**. Member of the feldspathoid group of minerals, composed of sodium aluminium silicate with calcium sulphate,  $3(\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2) \cdot 2\text{CaSO}_4$ . It occurs as greyish or brownish cubic crystals and grains in certain igneous rocks, mostly of volcanic origin, that are low in silica and rich in alkali.

**Nose-ornament**. Object worn in or on the nose, usually by passing it or a subsidiary ring or hook through a perforation. Made of bone, shell, feather, quill, tooth, wood, pearl, or metal, sometimes engraved or jewelled, it is amuletic or decorative.

Nose-pins, especially characteristic of Melanesia and Australia, are usually passed through the septum, the rite of piercing being sometimes completed by drawing a live snake through the perforation. Corpses with unpierced noses have the rite performed upon them, to avoid discomfort to the ghost in the afterworld.

Metal nose-rings, which may have antedated earrings in W. Asia, were adopted by the Hebrew people. Many O.T. references to rings concern nose-ornaments, as in Gen. 24. They were removed on the Sabbath. The khizam, worn by women in Cairo and among some Beduin tribes, is usually of brass, with red or blue glass beads. The practice is found in Africa from Nyasaland to the Gambia: the Yorubaland Egba insert coral plugs in the left nostril. Nose-rings became especially developed in India, among both Hindu and Mahomedan women. Tattooing of the nose also occurs.

**Nosology** (Gr. *nosos*, disease; *logos*, science). A science which deals with the classification and nomenclature of diseases. No general system has been agreed upon by doctors for this classification, but Nomenclature of Diseases of the Royal College of Physicians, a compilation originally due to Dr. William Farr in 1837, has been adopted with amendments by various countries.

**Nossi-Bé** or **NOSSY-BÉ**. Island off the W. coast of Madagascar. Belonging to France, it is situated

at the entrance to the Bay of Passandava. It is mountainous and volcanic. Its chief town, Hellville, named after Governor Hell, who took possession of the island in 1841, has an excellent harbour. The neighbouring islands are Nossi-Mitsiou, Nossi-Comba, Nossi-Sakatra, and Nossi-Faly. Area of Nossi-Bé, 130 sq. m.

**Nostalgia** (Gr. *nostos*, return; *algos*, grief). Homesickness, and a common symptom of regression (*q.v.*). In periods of strain, when adjustment to adult life or a new environment is painful and difficult, a longing is felt to return to a phase in which the individual was sheltered and happy. In bad cases the desire will be for a return to a childish state when everything was provided and there was no need to face responsibilities. This feeling precludes any real attempt to cope with life. It is sometimes found to be an early symptom of melancholia (*q.v.*).

**Nostoc**. Mucilaginous plants of the family Nostocaceae, of the



**Nose-ornament.** Examples worn by different groups or mankind. Left to right: Sudanese negress; Tamil girl; Papuan wearing tusks of a wild boar

division Protophyta, or simplest plants. They are exceedingly fine filaments, consisting of a large number of minute cells attached in a single series, which under the microscope presents the appearance of a necklace of pearls or beads. One or more of these filaments, coiled or twisted, are enclosed in hyaline jelly, and these masses, varying from 0.2 mm. to an inch in diam., float on bog-pools, appear on gravel paths, damp soil, or on rotting timber. They are often tinted green, violet, or blue. Sometimes they inhabit the cells of higher plants. *N. edule* is utilised by the Chinese as a soup ingredient. *N. commune*, the common species, is in some districts known as falling stars.

**Nostradamus** (1503-66). A French astrologer. Michel de Notredame was born of Jewish parents at St. Rémy, Provence, Dec. 13, 1503. After studying philosophy at Avignon, he became a doctor at Montpellier, and in 1544 established himself at Salon near Aix. He gained a reputation for cures during the plague which

ravaged the country, and in 1555 published at Lyons a book of prophecies (in rhymed quatrains) known as Centuries. In these he forecast the death of Henry II in a tournament and events of French history up to the Revolution. He became physician to Charles IX, and died July 2, 1566.

**Nosu.** Aboriginal people in S.W. China. Occupying the mountain region where Yunnan, Szechwan, and Kweichow meet, they represent a stock of Tibetan origin and primitive culture, who spread E. into the plains, driving before them the earlier Yao. They resisted the Manchu domination until early in the 18th century, when they were thrust back into the uplands above the 6,000 ft. level. They maintain feudal institutions and animistic practices.

**Notables.** Prominent personages formerly convoked in extraordinary council by kings of France. Dating from the 14th century, the council was called in times of national emergency, but had no powers, being purely consultative. The two most famous occasions of its being called were in 1787, when Louis XVI appealed to the notables for advice on the increasing difficulties of the monarchy, and was advised to convoke the states-general; and in 1788, when they were summoned to give advice on the representation of the Third Estate, and by their reactionary attitude deepened the public discontent and hastened the Revolution. See French Revolution; States-General.

**Notary** (Lat. *nota*, note). In England, originally an officer in the ecclesiastical courts. Notaries are still admitted by the archbishop of Canterbury through his representatives, but their duties are mainly secular. They serve an apprenticeship and pass an examination, and, in London, must belong to the Scriveners' Company. A notary attests or certifies documents, mainly in connexion with a failure to meet bills of exchange. There is a society of public notaries. In England a notary is usually a solicitor; in Scotland he must be a solicitor. Among the Romans the notary originally was a slave or freedman employed as a shorthand reporter of proceedings in the senate and law courts.

**Notation.** Musical term, meaning the use of signs to represent musical sounds. Its evolution has been slow, and no system is perfect for all purposes. Three chief methods have been employed: (1) representing scale relations, as

in the phonetic systems of the Hindus and Chinese, the old Greek systems, the modern Paris-Galin-Chev  figure notation, and the Tonic Sol-fa notation; (2) representing the fingering of certain instruments, known as tablature; (3) representing fixed pitch, as in the ordinary staff notation of modern W. Europe. Each of these methods of showing pitch is aided by time symbols of various kinds. See Musical Terms; Pitch; Stave; Tablature; Time; Tonic Sol-fa.

**Notation.** Any system of symbols for representing mathematical entities and operations: e.g. decimal notation.

#### Notes and Queries.

London weekly paper established Nov. 3, 1849, by W. J. Thoms, to form a medium for the exchange of knowledge between literary men and others. A monthly journal during the First Great War, it reverted to its weekly form in 1920, but became a fortnightly in July, 1942. It was purchased by The Times in 1920, and taken over by the Oxford University Press in 1939.

**Notice.** In English law, a term in frequent use, usually meaning knowledge of a fact. Sometimes, however, it merely means knowledge of some other fact, which ought to induce a careful and prudent man to make inquiry, from which inquiry he would probably have discovered the fact in question. In equity, a purchaser for value without notice of any defect in his vendor's title is always in a strong position. Thus if A has borrowed money from X on the deposit of his title deeds, and A, afterwards obtaining the deeds somehow from the lender, takes them and sells the property to B, as being unencumbered, B takes the property free from the charge. But if there was some fact or circumstance which ought to have put B on inquiry, and he did not choose to inquire, he may have to hold the property subject to X's loan. At common law, if the holder of a bill of exchange takes it with notice of any fraud in its inception or transfer, he will have no better title to it than his transferor had.

**Notification.** For notification of diseases, including list of notifiable diseases, see Disease.

**Noto.** Town of Sicily, in the prov. of Syracuse. It stands 2 m.

from the Mediterranean and 21 m. by rly. S.W. of Syracuse. It has some handsome palaces and an archaeological museum. There are prehistoric tombs, Greek cemeteries, and Christian catacombs. Trade is carried on in corn, oil, and wine. The present town was built in 1703, ten years after the destruction by earthquake of the medieval city, which occupied the site of Netum, a Sikel city 5 m. to the N. Pop. 32,000.

**Notochord** (Gr. *n tos*, back; *chord *, cord). In embryology, a cellular, cartilage-like rod, which appears in the embryo of vertebrates and forms the basis of the vertebral column. Except in the lowest forms of vertebrates it disappears after the embryo stage, and is replaced by the vertebral column. See Vertebrates.

**Notornis.** Very rare New Zealand bird. It belongs to the Ralliformes. The best known species has greenish plumage on the back, with head, neck, and under parts purple. Its wings are rudimentary and it cannot fly, but runs



Notornis. Very rare bird of New Zealand

fast. Living specimens were caught in 1849, 1851, 1879, and 1898. Then in 1948 three were seen and two captured, examined, photographed, and released, near lake Te Anau. Later that year an expedition to the area filmed 20 breeding pairs.

**Not Proven.** A verdict which may be given in a criminal trial in Scotland. It has legally the same effect as a verdict of not guilty. A famous verdict of not proven was that given at the trial of Madeleine Smith in Edinburgh in 1857 for the murder of her lover L'Angelier.

**No Treating Order.** Drink restriction in Great Britain during 1915-19. It was introduced to prevent excessive drinking in munition areas and by soldiers on leave, and forbade the purchase in licensed premises or clubs of an alcoholic drink for another person. Infringement of the order was punishable by a fine.

**Notre Dame** (Fr., Our Lady). In French ecclesiology, name for the Virgin Mary. Numerous churches are thus dedicated, in Paris and elsewhere, notably the cathedral, Note Dame de Paris. Situated in the  le de la Cit , this cathedral stands on the site of a 7th century church of S.  tienne and of a church of Notre Dame re-



built in the 9th century. Begun in 1163, and completed early in the 14th century, the existing building was converted into a Temple of Reason, 1793-94.

The building was reopened in 1795 for divine worship, handed over to the R.C. Church in 1802, restored in 1845, and damaged by the Communards in 1871. A magnificent example of decorated Gothic architecture, its length is 390 ft. Two towers have quaint gargoyles on their balustrades and are 226 ft. high. The fine sculptured façade was completed in 1240. The aisles are prolonged round the choir, there are 37 chapels, and beautiful old glass in the rose windows of the transepts, between which rises the 315-ft. spire. See Apse; Paris.

**Notre Dame Bay.** Arm of the Atlantic Ocean, on the N. coast of Newfoundland. It lies between Cape St. John and Fogo Island, a distance of 45 m.; the E. end contains an extensive archipelago in the Bay of Exploits.

**Notre Dame de Paris.** Romance of medieval Paris by Victor Hugo, first published in 1831. Full of character, exciting incident, and vivid action, it ranks as one of its author's masterpieces of fiction. Quasimodo, the hunchback of Notre Dame, and Esmeralda, the gipsy girl with her goat, Djali, are numbered among the familiar figures of fiction.

**Nottingham.** City, co. bor., market town, and the co. town of Nottinghamshire, England; also co. of itself. It stands on the N. or left bank of the Trent, 123 m. N.N.W. of London, and is served by rlys. and canals. Its area,

since the extension of the boundaries in 1932, is 16,166 acres. It was made a city 1897; in 1928 its chief magistrate became a lord mayor. Pop. (1951) 306,008.



Nottingham arms

The town probably originated in an Anglo-Saxon settlement. It was later a Danish burgh. It was soon recovered from the Danes, and Edward the Elder is said to have walled the town, built a bridge across the river, and erected a mint. A castle was built on a rock overlooking the Trent by a follower of William I soon after the Norman Conquest.

In the Middle Ages Nottingham was an important borough and its castle a regular royal residence. It received charters making it a corporate town and bestowing privileges upon its citizens; in 1449 it was made a county of itself, and at one time comprised two boroughs, one French and the other English, each with its own laws and customs. Here Isabella, queen of Edward II, was captured with her lover, Roger Mortimer. In 1642 Charles I set up the royal standard on a spot still known as Standard Hill, and the castle was held by Colonel Hutchinson throughout the Civil War.

The city's modern history is mainly that of its growth into a great manufacturing centre, although the Reform riots of 1831, when the castle was destroyed, must not be forgotten. Industrial development began early and the

town soon had ironworks and foundries, from which issued the bell, Great Tom, afterwards hung in Lincoln cathedral. Nottingham became a seat of the stocking trade in the 18th century.

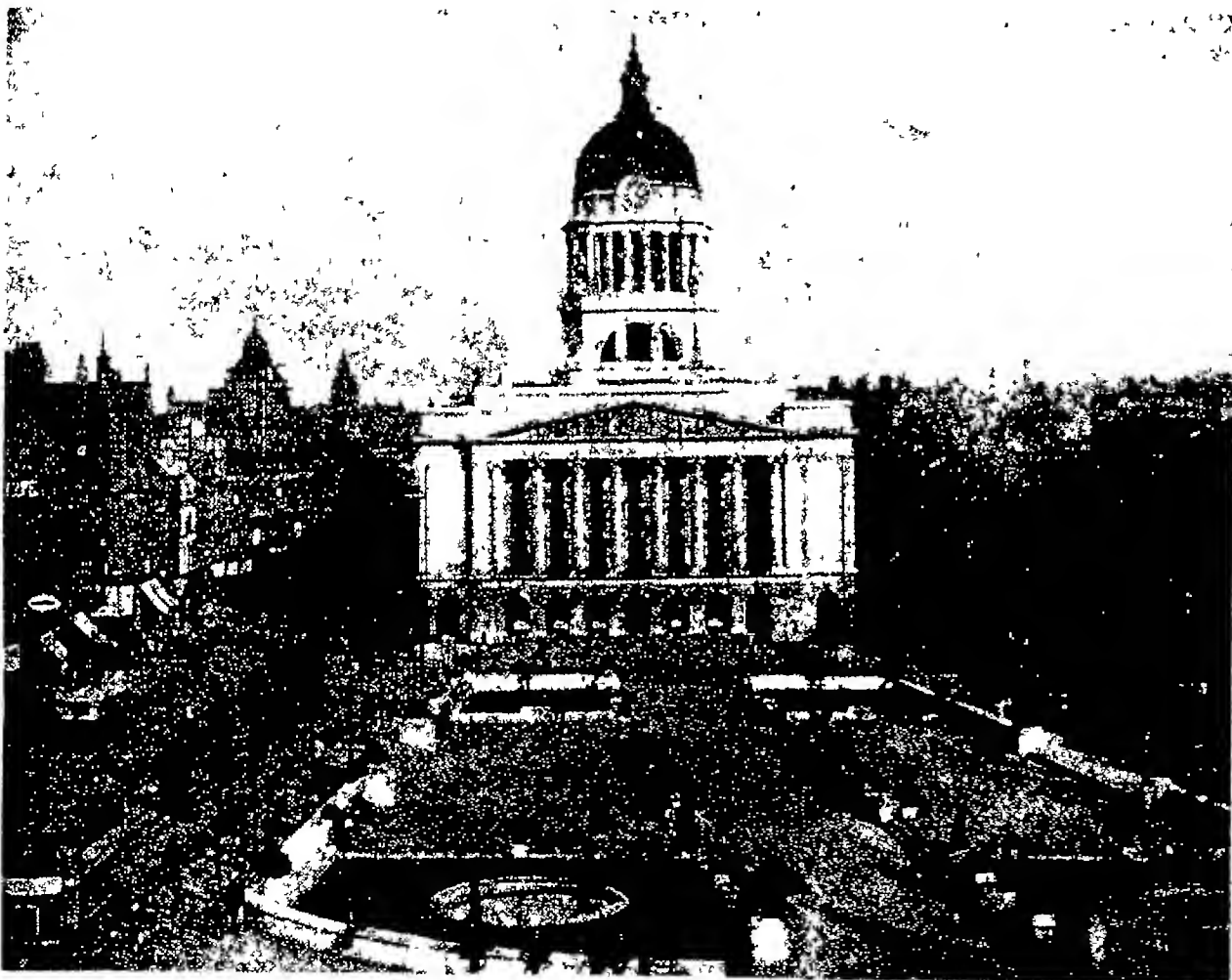
Lace making, for which Nottingham is famous, is the direct natural descendant of the older stocking making trade, as the first lace was made here on a stocking frame in 1760. The lace is made in factories in the adjoining districts as well as in the city itself, being finished in the warehouses of the city. Connected with this industry are bleaching and dyeing establishments, and there are works for the manufacture of lace machines. An offshoot of the lace trade is the making of blouses, aprons, underwear, etc., and veilings and embroideries and men's and boys' clothing are made. Hosiery also employs many. There are engineering works, the output of cycles being great, large tanneries and tobacco factories, while soap and drugs are other products. Other industries are brewing and malting, cotton spinning, boxmaking, brickmaking, and colour printing. There is a transit trade along the river, and the city has cattle markets. Goose Fair, held annually in Oct., is an ancient institution.

The immense former market place in the centre of the city has been laid out as a magnificent square with a processional way leading to the fine council house. There is a new, spacious cattle market. The chief church is S. Mary's, a fine Perpendicular structure of the 15th century; S. Peter and S. Nicholas are old foundations.

The castle, which was rebuilt in 1875 and bought by the corporation in 1952, became an art gallery. The Albert and Mechanics' Halls are large public buildings. The city contains numerous open spaces, including the Forest and the Arboretum. On Bulwell Forest and in Bulwell Hall Park are municipal golf courses. Trent Bridge is famous as a cricket centre.

The city is governed by a lord mayor, sheriff, and council of aldermen and councillors. It has a recorder, who holds here courts of quarter sessions, and it is an assize town. With the urb. dists. of Hucknall and W. Bridgford, the bor. forms four bor. constituencies.

**THE UNIVERSITY OF NOTTINGHAM.** This seat of learning, which originated as a university college in 1881, was the first in England established by municipal action.



Nottingham. The Council House dominating the Square and processional way

In 1928 Sir Jesse Boot (1850-1931, created Baron Trent) provided fine new buildings for the college which by royal charter was granted university status in 1948, the 2nd Lord Trent (1889-1956) being appointed the first chancellor. The university, with more than 2,000 students, has faculties of arts, pure and applied science, agriculture and horticulture.

**Nottingham, CHARLES HOWARD, EARL OF (1536-1624).** English sailor. The eldest son of Lord Howard



Charles Howard,  
Earl of Nottingham  
After C. Janssen

of Effingham, lord high admiral of England, and first cousin to Anne Boleyn, he served at sea as a youth, and after Elizabeth's accession occupied several court appointments before he became lord high admiral in 1585. A gallant and able sailor, he was in command when the Armada (*q.v.*) appeared and was largely responsible for its defeat. In 1596 he and Essex sailed to Cadiz and sacked the town, and on his return he was created earl of Nottingham. In 1599 he was given command of all the sea and land forces. He died at Croydon, Dec. 14, 1624, and was buried at Reigate.

**Nottingham, HENEAGE FINCH, 1ST EARL OF (1621-82).** English politician. Born Dec. 23, 1621, the son of Sir Heneage Finch, Speaker of the house of commons, he was educated at Westminster and Christ Church, Oxford, and called to the bar in 1645. Entering parliament in 1660, he was made solicitor-general, and in 1674 lord chancellor and a baron. Created an earl in 1681, he died Dec. 18, 1682.

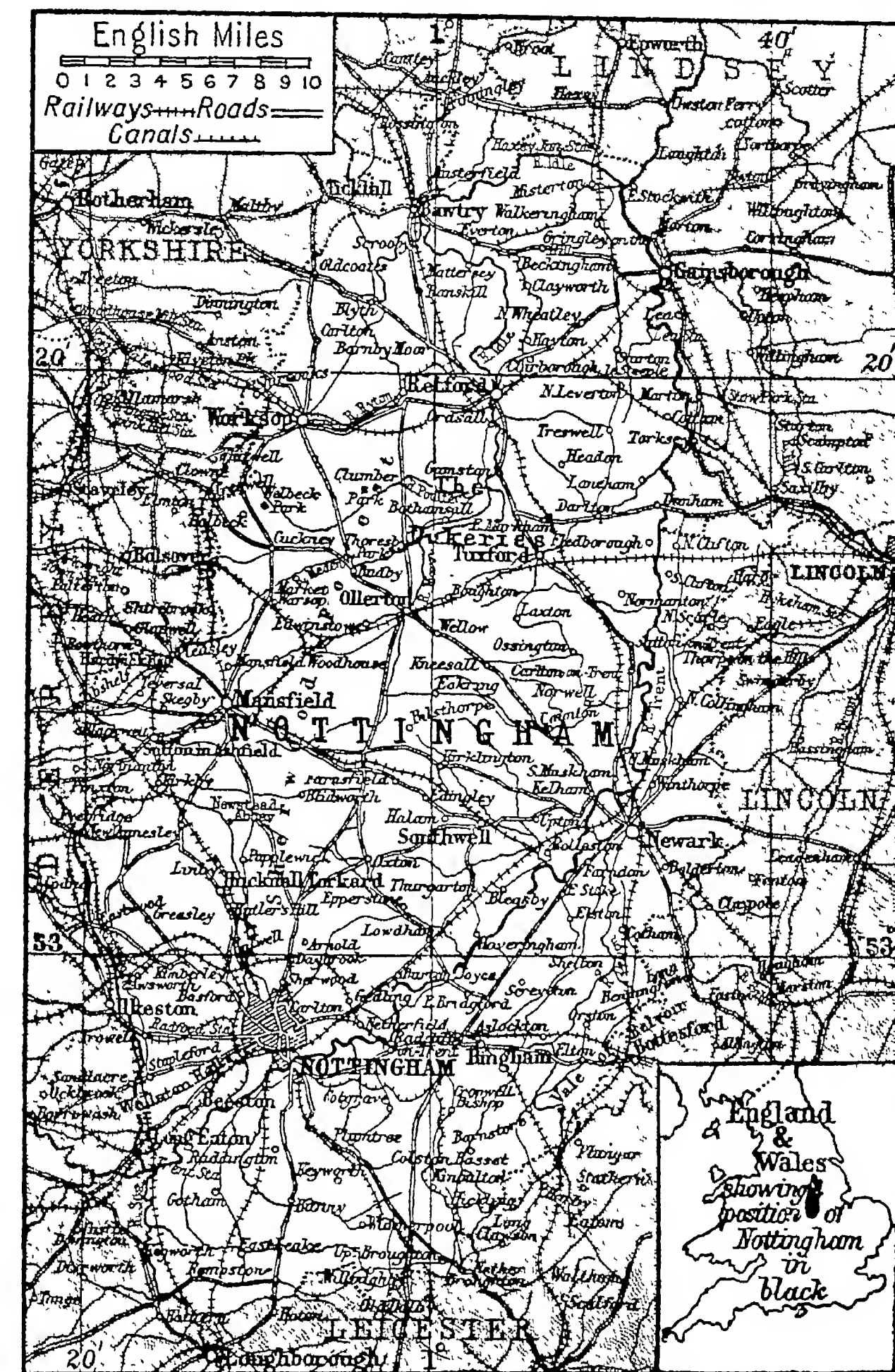


Heneage Finch,  
Earl of Nottingham  
After Lely



Daniel Finch,  
Earl of Nottingham,  
English politician  
After Kneller

**Nottingham, DANIEL FINCH, 2ND EARL OF (1647-1730).** English politician. Son of Heneage Finch, earl of Nottingham. He early entered



Nottinghamshire. Map of this industrial and agricultural inland county of the north midlands of England

public life, became a privy councillor and a lord of the admiralty, and was one of James II's warmest supporters until alienated by that monarch's ecclesiastical policy. He took no part in bringing about the Revolution, but in 1690 was one of the council chosen to assist Queen Mary during the king's absence in Ireland. At George I's accession Nottingham was made president of the council, but he lost favour in 1716. He died Jan. 1, 1730.

**Nottinghamshire.** County of England. Wholly inland, its area is 844 sq. m. It is in the main a level region, much of it being the valley of the Trent, but there are wolds in the S. and some hills in the W. The chief river is the Trent; others are its tributaries, the Idle and the Erewash, which

latter separates the county from Derbyshire.

Notts may be divided roughly into a coalmining and industrial area in the W., an agricultural one in the E. Barley and oats are grown; sheep and cattle are reared. Coalmining began in the Middle Ages; lace making



is traditional, and hosiery making was introduced in the 16th century; also there are engineering works, bicycle and tobacco factories, etc. Main line rlys. to the N. pass through the co. In it are the remains of Sherwood Forest including the



district known as the Dukeries (*q.v.*). Other places of interest are Cresswell Crags, where traces of primitive man have been found, and the fine houses of Welbeck, Thoresby, Clumber, Newstead, and Wollaton. There are remains of monasteries at Newstead, Thurgarton, and elsewhere. Nottingham is the county town; other boroughs are Mansfield, Newark, Retford, and Worksop. The county forms six county and four borough constituencies. Notts is mainly in the diocese of Southwell. Before the Norman Conquest it was part of Mercia. It passed under the control of the Danes, and there are traces of Danish settlements. Pop. (1951) 841,211.

**LITERARY ASSOCIATIONS.** The most prominent figure is Byron, who passed much of his early life at Southwell and Newstead, and is buried at Hucknall Torkard. Other poets of the county are H. K. White and P. J. Bailey, both born at Nottingham. D. H. Lawrence was born at Eastwood. Thomas Cranmer came from Aslockton, and Erasmus Darwin from Elston Hall. In the literature of legend the county has Gotham (*q.v.*), and Sherwood Forest, background to tales of Robin Hood, and also to the ballad of The King and the Miller of Mansfield.

**Nottinghamshire and Derbyshire Regiment, THE.** Official name of the British regiment better known as The Sherwood Foresters (*q.v.*).

**Notting Hill.** London district. Part of the bor. of Kensington, it is N. of Holland Park, with Bayswater to E. and Shepherds Bush to W. At Notting Hill Gate was an old turnpike, removed in 1864; near the Met. rly. station is the Coronet Theatre, built 1898, later a cinema. On the rising ground of Ladbroke Grove, known in 1820 as Notting Hill Farm, is S. John's church, 1842-45. The farm was succeeded, 1837-41, by a race-course, recalled by the name of Hippodrome Place. The district, built over 1828-48, was named from the manor of Knotting or Nutting Barnes, owned by John de Vere, earl of Oxford in the time of Edward IV.

**Nouméa.** Capital of the French island of New Caledonia. Situated on a bay in the extreme S., it engages in smelting and treatment of nickel ore. The Collège La Pérouse is one of the principal educational institutions in the Pacific. Nouméa is connected with Sydney, N.S.W., by monthly

steamer service. In the Second Great War, New Caledonia having declared for Gen. de Gaulle, British and U.S. aircraft carriers were based on Nouméa during operations against Japanese-held islands. Pop. 10,466.

**Noumenon** (Gr. *nooumenon*, anything thought). Object of pure thought, opposed to phenomenon, the object of sensation. Kant further distinguishes the object known by the mind from the noumenon, which can be conceived but not known. The object is relative to intelligence generally; the noumenon is relative to nothing—it is the thing-in-itself, not the thing as we see it. *Pron.* No-oomenon.

**Noun** (Lat. *nomen*, name). In grammar, a word denoting a person or thing (noun substantive), or a quality (noun adjective). The term substantive (*substantivus*, self-existent) is due to the grammarians of the Middle Ages. Nouns substantive may be divided into abstract, expressing an attribute of a person or thing (virtue, beauty); concrete, designating real persons or things, to which such attributes belong; concrete nouns being further divided into proper, distinguishing any particular living being or inanimate object from others of the same kind (Henry, London); common, embracing all persons or things belonging to the same class (man, dog, house); collective, designating a collection of persons or things regarded as forming a whole (army, multitude, heap); partitive, indicating a part, variable in amount, of a collective whole.

**Nouveau Québec**, CRATÈRE DE. See Chubb Crater.

**Nova** (fem. of Lat. *novus*, new). A temporary star noticed when a previously faint star blazes up in two or three days to a brightness usually between 10,000 and 1,000,000 times its value before the outburst. Since the star has usually been below visibility to the naked eye, it suddenly appears to the observer as a "new" star, hence the name. Its decline from maximum brightness is not so rapid as its rise, but within a few weeks the average nova has faded to about one hundredth of its maximum light and is probably again invisible to the unaided eye. A year or two afterwards the star has returned to insignificance.

The brightest recorded novae are Nova Cassiopeiae, discovered by Tycho Brahe in 1572, which became brighter even than Venus and was visible in broad daylight; Nova Ophiuchi, discovered by

Kepler in 1604, which reached Jupiter's brightness; and Nova Aquilae, 1918, which exceeded in brightness all stars except Sirius. Nova Herculis in 1934 reached the first magnitude, and Nova Puppis in 1942 was as bright. Nearly 100 novae have been discovered since 1900, but most were invisible to the naked eye.

Novae generally appear in or near the Milky Way. This indicates that they are members of the galactic system which are so bright intrinsically that they can be seen at great distances. Study of novae appearing in other galaxies (*e.g.* the Andromeda nebula) suggests that they equal the brightest ordinary stars.

Some idea of the physical processes occurring during nova outbursts can be obtained from their spectra, which show at successive stages different features rarely matched by ordinary stars. The occurrence first of absorption lines and later of emission lines displaced (*see* Doppler's Principle) by amounts corresponding to velocities of approach of thousands of miles per second suggests that the outer envelope of the star is blown off by some catastrophic explosion as a succession of gaseous shells. Nebulous envelopes have been seen telescopically around some novae after the outburst. These rapidly attenuate as they expand, and give rise to a nebular spectrum (*see* Nebulium) typical of gases at low pressure illuminated by a central star at very high temperature. After months or years the gaseous envelope becomes too thin to radiate and the central star giving an ordinary stellar spectrum remains. **A. Hunter, Ph.D., F.R.A.S.**

**Novaculite** (Lat. *novacula*, razor). In geology, name given to a fine-grained rock consisting of small quartz particles. Several varieties are used as hones.

**Novaia Zemlia** OR NOVAYA ZEMLYA. Archipelago of the Arctic Ocean, belonging to the U.S.S.R. It stretches N.N.E. between Barents Sea on the W. and Kara Sea on the E., and is separated from Waigats or Vaigach Island by Burroughs Strait. It is composed mainly of two large islands, divided by the Matochkin Shar or Matthew Strait; that to the S. is called Goose Land (*q.v.*), while the N. island is divided into Barents Land in the N., Lutkes Land in the centre, and Matthews Land in the S. Several small islands, mainly off the E. coast, combine to make the archipelago. The total land area is est. at 35,150 sq. m.

**Novalis.** Pseudonym of Friedrich Ludwig von Hardenberg (1772-1801), German writer. He was born May 2, 1772, at Wiederstedt, Prussia, and studied philosophy at Jena and law at Leipzig and Wittenberg, where he graduated in 1794. He fell in love with the beautiful Sophie von Kühn, whose death in 1797, at the age of 15, proved a great blow to him. In 1800 he was at Freiburg, studying mineralogy, when pulmonary consumption declared itself, and he died at Weissenfels, March 25, 1801.

His *Hymns to the Night*, 1800, written after he lost his betrothed, breathe a lofty spirituality. Apart from romantic philosophical fragments and those hymns, his chief work is a great unfinished romance, *Heinrich von Ofterdingen*, in which the symbolism of the pursuit of the blue flower by the hero is an interesting precursor of Maeterlinck's *Blue Bird*. His works were edited by L. Tieck and F. Schlegel, 1802, and his correspondence was published in 1880. *Consult Miscellaneous Essays*, T. Carlyle, vol. 2, 1829.

**Novara.** Frontier prov. of Italy, in Piedmont. It is bounded N. by Switzerland, W. by Vercelli prov., S. and E. by Lombardy. Area 2,548 sq. m. Pop. (1951) 421,818.

**Novara.** City of Italy, capital of the prov. of Novara. Situated on an eminence between the rivers Terdoppio and Agogna, it is a junction 31 m. by rly. W. of Milan. Among its many handsome edifices are the Romanesque cathedral, dating from the 4th century, with a 10th-century baptistery and old frescoes; the church of San Gaudenzio, founded in the 5th century and rebuilt in 1570; an ancient citadel, now used as a prison; and a museum with Roman antiquities. Rectangular streets recall the Roman occupation of Novara. Its old fortifications have been replaced by boulevards. The chief industry is the manufacture of textiles. Pop. (1951) 72,350.

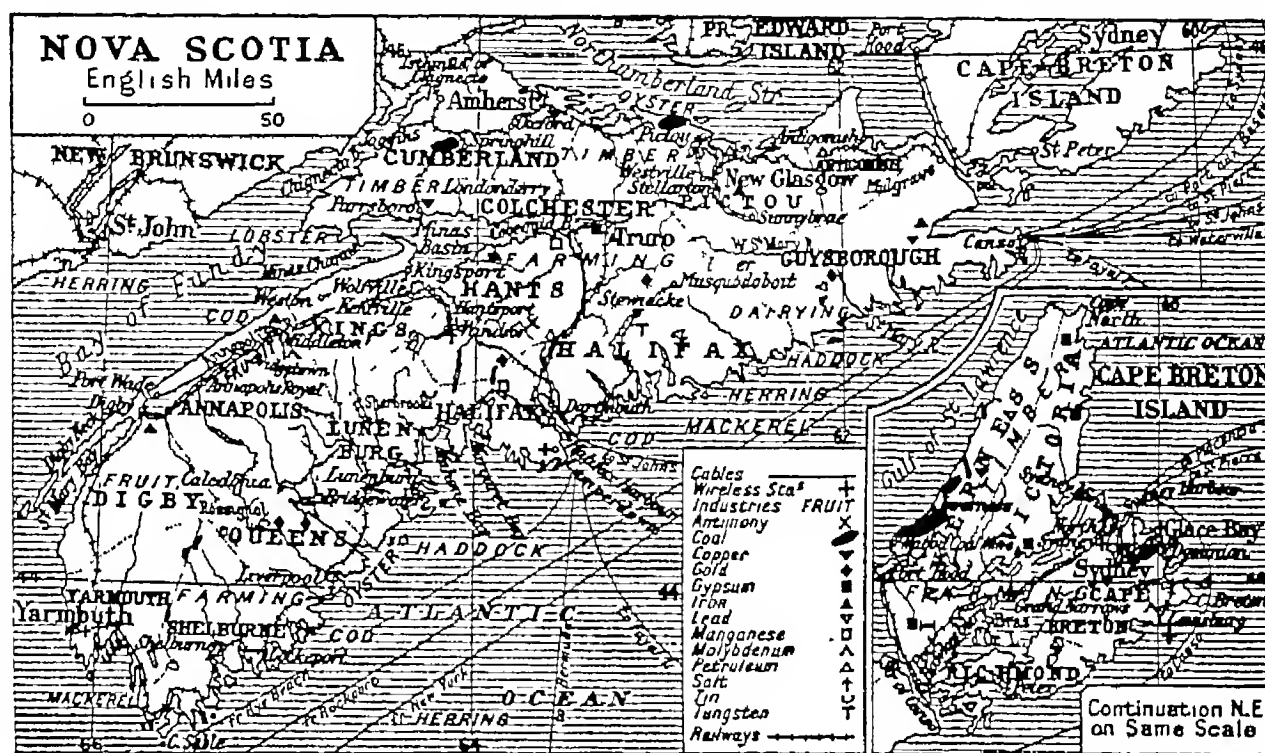


Novara, Italy. Dome of S. Gaudenzio, 397 ft. high, and part of the cathedral, right centre

**Novara, BATTLE OF.** Austrian victory over the Piedmontese, March 23, 1849. The armistice which followed the Austrian victory of Custoza, 1848, was succeeded by protracted and futile negotiations between England, France, Austria, and Piedmont. Wearied of a state of affairs in

lakes in Cape Breton. Many small islands lie off the coast.

Halifax is the capital, the chief port, and the largest city. Sydney, on Cape Breton, a mining centre, is the next in size, and third comes Glace Bay. The affairs of Nova Scotia are managed by a ministry responsible to the house



Nova Scotia. Map of this Canadian maritime province. Halifax is the winter port of entry from the Atlantic

which the only certainty was the daily strengthening of Austria, Charles Albert of Piedmont denounced the armistice, March 12, 1849, whereupon Radetzky made a rapid march and attacked him at Novara. Charles Albert's defeat was so overwhelming that he abdicated in favour of his son, Victor Emmanuel II.

**Nova Scotia.** One of the three maritime provinces of Canada. Its area is 21,068 sq. m., of which 325 sq. m. are water, and its pop. in 1956 was 694,717. The province consists of two parts. The larger is the peninsula of Nova Scotia, surrounded by the sea except where the isthmus of Chignecto, 11½ m. wide, unites it to New Brunswick. The smaller is the island of Cape Breton to the N.,



Nova Scotia arms

the strait of Canso lying between the two. The coast is very indented and has many openings, Minas Basin being the deepest. Halifax and Sydney have the finest harbours. There are a number of lakes, including Rossignol in Nova Scotia, and the Bras d'Or

of assembly, of 30 members, who are elected every five years. The province sends 10 members to the federal senate and 13 to the federal house of commons. Its second chamber, or legislative council, was abolished in 1928.

Nova Scotia is mainly an agricultural area. Dairy produce, poultry, and fruit are the chief products, the apples of the fertile Annapolis valley being famous. Oats and potatoes are also largely grown. There is a good deal of forest land and much timber is felled. Cape Breton has a rich coal-field, and in Nova Scotia coal, iron, gold, salt, and gypsum are worked. The fisheries are valuable, chief among them being cod, lobster, and mackerel; trout and salmon are caught in the rivers. The rlys. converge on Halifax.

The French took the area, calling it Acadia, and making their first permanent settlement in 1604. In 1613 the English ousted the French; and in 1621 James I gave the land to a Scotsman, Sir William Alexander, to which fact it owes its name (New Scotland). It was given back to France in 1632, and again in 1667, after it had been taken by Cromwell. Port Royal, the later Annapolis, was then the capital.

The long struggle between England and France for the possession of America was partly fought out here; in 1710 Great Britain again seized Nova Scotia, keeping it by the treaty of 1713, but Cape Breton



remained French. At this time Nova Scotia included New Brunswick and Prince Edward Island, although its W. boundary was uncertain. On Cape Breton the French built the strong fortress of Louisburg, which was twice captured by the British. In 1748 it was restored, but the second time it, and with it Cape Breton, was retained, and it formally became British in 1763.

From Nova Scotia itself the British in 1755 had expelled the French settlers, known as Acadians, and during the Seven Years' War the French vainly attempted to recover the region. After the British victory in 1763 New Brunswick and Prince Edward Island were separated from the colony.

In 1867 Nova Scotia was one of the four provs. composing the new dominion of Canada. It had had representative institutions since 1758, but their corollary, responsible government, was secured only about this time. The union once effected, there was soon a strong agitation for withdrawal, but financial concessions were made, the Inter-colonial rly., part of the bargain, was completed, and the movement gradually died away. Woman franchise was passed into law in 1918.

**Novatianism.** Schism which arose in the Christian Church in the 3rd century. It was named after Novatian, a presbyter of Rome, who was joined by Novatus of Carthage. Its adherents called themselves Cathari (*q.v.*) and separated from the Church as a protest against the laxity of the Roman clergy in receiving the lapsed to penance. Novatian is described as the first anti-pope, and he instituted a succession of schismatic bishops which existed for nearly 300 years. The Novatians denied that the Church could reconcile those who had fallen after baptism into deadly sin; they rebaptized those who joined them.

**Novation** (Lat. *novatio*, making new). In law, the substitution of one legal obligation for another. The situation constantly arises in the case of a change of partners in a firm. Thus if A and B are partners, under the title of A and Co., and have dealings with X, and B retires from the firm and C comes into it; and X, with knowledge of the change, goes on dealing with A and Co., he is deemed to accept A and C as his debtors (or creditors) instead of A and B.

**Novaya Zemlya.** Arctic archipelago of which the alternative spelling is Novaia Zemlia (*q.v.*).

## THE NOVEL: ITS HISTORY AND RANGE

Frank Swinnerton, distinguished Novelist and Critic

*The development of the art of reflecting life through imaginative fiction is here clearly presented, from the earliest travellers' tales to the contemporary excursions into unlimited subjectivity. See also English (Language and) Literature; Short Story; and under the sub-heading Literature in the articles on various countries, e.g. France, Germany, Hungary, Iceland, Russia, etc.*

As soon as men began to narrate their adventures, and, for the better understanding of audiences, to arrange them in dramatic sequence, the novel was born. Only the types of adventures, and the degrees of emphasis in the narration, varied in the following centuries; and the earliest romances known to us are, in essence, travellers' tales. In these, love, magic, extraordinary accident, supposed death, and capture by and escape from pirates, are succeeded by eventful wanderings in strange countries, hardships, dangers, reunions, feasts, and happiness. Such stories mirrored the hopes and fears of listeners, excited their wondering curiosity, and pictured for them a wider, more enthralling world than the one they knew.

### Adventures of "He" and "She"

In the early centuries of the Christian era, when the satiric Golden Ass, the charming pastoral Daphnis and Chloë, and the elegant and ingenious Theagenes and Chariclea of Heliodorus were composed, almost anything could happen in that unexplored world. Intercourse between communities was small, and credulity was eager. Story-tellers therefore enjoyed a freedom which modern authors cannot hope for, and gloried in the invention of all that seemed to them extraordinary. They discovered, however, one fact which later novelists have confirmed. It was that those who listened wanted to hear, not about great armies or undertakings, but about individuals, "he" or "she," who might be themselves or their idealised loves. Whether they were shepherds and shepherdesses, or distracted pilgrims, or, as the age of chivalry approached and was realized, knights and their ladies, they were henceforward "he" and "she," the prototypes of all later heroes and heroines of romance.

The whole of Europe gradually shared in such stories, which were carried from one land to another by minstrels and tale-tellers; and to this day, although students alone read the actual narratives sung or recited throughout the Middle Ages, we all know the

chivalric legends garnered by Geoffrey of Monmouth and, much later, Sir Thomas Malory. Daphnis, Chariclea, Hysmene, and Callirrhoe became Charlemagne, Arthur, Gawain, Galahad, and at length Tristram, Guinevere, Lancelot, and Ysolt. In Scandinavia their ordeals were grimmer, in the Orient more ghastly; but, whatever names the heroes bore, all were splendid puppets, to be lauded to simple audiences, loving, feasting, fighting against men and magic, and wandering, sometimes upon mighty quests, in a largely unpopulated world.

What Saintsbury called "the pure novel" did not begin to be written until much later; yet it was on the way. By the 14th century narrative had been sharpened by the sly cruelties of Boccaccio and his imitators (Italy had no romances of chivalry), and by the 16th it had been enriched by the monstrous humorous extravagance of Rabelais. And although a largely bogus heroic romance reached immense popularity in Spain, and the Arcadia was written to universal admiration late in the 16th century by our own Sir Philip Sidney, this older type of romance lost its hold as the conditions in which it thrived yielded to the effects of the Renaissance. To the knight had succeeded the adventurer. The rogue appeared in Spanish literature. And at last came the greatest knight of all, in whose veins, for the first time in fiction, ran perceptible warmth. With Don Quixote we do indeed approach Saintsbury's "pure novel," a tale "confining itself to the incidents of ordinary life; advancing character to a position at least equal with plot; presenting the manners of its own day, but charging them with the essence of humanity in all days."

### Progressing towards Realism

Henceforward, with hesitations and long periods of sterility, the story of the novel, as distinct from the romance, can be told as one of progress from the improbable to the real, from the flatly external to the limitlessly subjective. Don Quixote was the example from which English

masculine novelists of the 18th and 19th centuries learned to regard men and women as moral beings with an important relation to the society in which they lived. It thus had an influence which we still feel. Two French novels which similarly may be said to have created the feminine novel, or story of sensibility, were Mme. de La Fayette's brief study of motive and emotion, delicacy, and temperament, *La Princesse de Clèves*, which presented the now familiar "triangle," and the analytical *Vie de Marianne*, of Marivaux. These two books lead us directly to Samuel Richardson, whose close pictures of women were once called excursions into "imaginative ethics," and by way of Richardson to all those writers who have since specialised in the human heart.

#### Objective Realism

A third element now appeared in fiction: objective realism, the scrupulous imitation of fact. Defoe, its inventor, was an experienced journalist with a remarkable gift for detail; and after recording his observations as traveller and spy for nearly sixty years he brought the gift to fiction with overwhelming effect. Thus by 1719, when *Robinson Crusoe* was published, the novel had been granted humorous and critical humaneness, sensibility, and realism. It was largely dominated by these characteristics, in England, for a hundred years; and, allowing for inevitable changes in manners and literary style, one may find the same characteristics in the great Victorian novels and in books as late as *The Old Wives' Tale*, 1908, and *The Good Companions*, 1929. "A novel," said Smollett, halfway through the 18th century, "is a large diffused picture, comprehending the characters of life, disposed in different groups and exhibited in various attitudes, for the purposes of a uniform plan."

No such definition would have covered the French novel of the same period, although both Fielding and Smollett were certainly acquainted with *Gil Blas* and *Le Diable Boiteux*. On the whole the French novel of the 18th century, by comparison with what was being written in England, was desiccated. But wit, a first demonstration of psychological analysis, and at least some sense of truth and proportion are revealed, and Prévost in one tiny masterpiece, *Manon Lescaut*, and Rousseau in the first portion of *La*

*Nouvelle Heloise*, allowed themselves something which their English contemporaries were denied. This was passion.

Nor were the large-scale realists unchallenged in England. Sterne caught inspiration flying and threw off a few dazzling characters; Horace Walpole and Mrs. Radcliffe, perhaps by reaction from the rationalism of their century, made magic of ruined castles, dungeons, and the supernatural in what they called "Gothic romance." And, while Sterne had a doubtful progeny of sentimentalists, sham Gothic, the favourite "horrid" reading of young ladies, led in time to, and was transcended by, the Scotch novels (as they were called) of Sir Walter Scott. Scott, an antiquary, is inexact called an historical novelist, and of late has been underrated. His greatest novels, which described almost contemporary life, brought to prose fiction, for the first time, an Elizabethan grandeur of comedy and tragedy. At his best he is comparable in creative power to Shakespeare; and his liberating influence upon all imaginative prose literature cannot be exaggerated.

By contrast with the Scotch novels, those of Jane Austen, written about country house and village life at the very end of the 18th century, are occasionally thought to be amusing parochial satires on snobs, schemers, and silly young women. The delight they give, however, is endless. They grow new delicious chapters, and the characters in them reveal new profundities of understanding, at every reading. As comedies of life and manners they are unique.

#### Zenith of the English Novel

The supreme days of the English novel had now been reached; and in the year of Queen Victoria's accession, Charles Dickens published *The Posthumous Papers of the Pickwick Club*, in which, to the roving manner of the traditional romance, he added uproarious merriment, satire, severe social criticism, and a greater capacity than Fielding's or Smollett's for the invention of droll minor personages. The book, with its sequels, made the novel universal family reading, and spread here and abroad, especially to France and Russia, such new inspiration as had been carried previously only by Cervantes, Richardson, and Scott.

Dickens loved melodrama; he could not resist his own comic

exuberance, and his pathos has lost its effect. But he had astounding creative energy. It far surpassed that of his distinguished contemporaries, who, shrinking appalled from his vulgarity, refined, deepened, and broadened the scope of good-humoured fiction until, with Thackeray, it embraced the genteel world, with Trollope the broad counties, with George Eliot the very spirit of altruistic rationalism, and with half a dozen others (not more effective than Dickens in arousing the moral sense of a people) the sufferings and social anomalies of an increasingly industrialised society. In England, for almost the whole of the 19th century, the novel was the most powerful instrument of ethics which had been invented by man. It was full of engrossing story and generously conceived characters; but except for the Brontë sisters, it was not impassioned, and, except for Jane Austen, it was not a precise and delicate work of art.

#### The French Masters

The English novelists, in fact, were instinctive novelists. They brought to their work genius, intellect, and inexhaustible love of humanity. They had hardly at all grasped the notion that there could be something classifiable as "the novel." This was partly true even of the two last great Victorians, Meredith and Hardy, who both, however, dramatised life; the one, after the manner of the Restoration playwrights, as comedy, the other, following the greatest Elizabethans, as tragedy. It was much less true of the majestic Frenchmen, Beyle and Balzac, of whom the former brought cold analysis of vice and virtue, action and emotion, to a degree previously unattempted, while the latter conceived the scheme of incorporating all life—spirit, flesh, work, wealth, and misery—in a series of novels which he afterwards called *La Comédie Humaine*. These two men were the first modern novelists. From what they wrote, almost the whole of French fiction arose. But where Balzac spun from within himself a fabulous France, Zola drew more precisely from observation and blue book, and still later Jules Romains and other social historians have taken what are called cross-sections of life. Where Stendhal (Beyle) coolly watched heartless lovers, Flaubert calmly portrayed wantons and romantics.



The differences were those of art, age, and environment; the resemblance was racial. The French are realists. In creative literature they love type and form. To the French above all, therefore, we owe the development of novel-writing as an art.

To say this is not to deny the creative supremacy of the Russian novelists, who had a power, breadth, and passion unknown in other literatures. They, more than the French, learned from Dickens; and the debt is apparent in both Gogol and Dostoevsky. But Dostoevsky, who was once scornfully described by George Moore as "Gaboriau with psychological sauce," learned from Dickens only a large looseness of construction. His temperament and his terrible experience as a man condemned to death and reprieved carried him to vehement heights and depths of emotion which Dickens could never have shared. His religious fervour, and the hyperaesthesia which gave him such insight into the minds and hearts of anguished people, could have had no place in English fiction, where the only writer to approach him for intensity of feeling was D. H. Lawrence, or even in American fiction, despite the apocalyptic splendours of Herman Melville. Moreover, the grand range of the Russian novel, sensational in Dostoevsky, but in Tolstoy's *War and Peace* impressively restrained, puts it beyond all comparison.

This question of size and conception does not arise in the case of Turgenev, the third of the greatest Russian novelists, because Turgenev has not the tumult of Dostoevsky nor the cosmic imposingness of Tolstoy's *War and Peace*. He was an artist in the French sense; his books are short, subdued, poignant in their revelations of sorrow and frustration. Although there are differences in quality as in theme, Turgenev had as followers both Henry James and the early Galsworthy. Like them, he devoted himself to the drama of character, to the interaction of a small group of people of sensitive breeding; like them, he relied, as Joseph Conrad did, upon the significant word and gesture to convey every feeling and in particular every suffering of his very subtly seen characters.

James and Conrad did this, the one in delicate casel-dramas, the other in beautiful or dramatic pictures of failure and conflict. Proust, in France, expanded what

James refrained from expanding: he did not bring crisis to the easel, but with enchanting sensitiveness and taste he gave to the novel what James reserved for his autobiographical books, *A Small Boy*, and *Notes of a Son and Brother*. But Proust offered a lead—no more—to other writers who wove their reveries into a kind of novel known as "the stream of consciousness." At a time when realism was in eclipse, these writers brought fiction farthest from its beginnings. They looked within. For the external flatness of classical romance, and the humorous jog-trot of the popular chronicle, the world-changing improvisations of H. G. Wells, and the searching patiences of Arnold Bennett, they substituted poetic fantasy and what may be called the egotistic destructive. The novel had reached the subconscious. We do not yet know where it will go next. See English Language and Literature; Language and Literature subsections under the headings of Belgium, France, Germany, etc.; Dickens; Hardy; Meredith; Scott; Thackeray, etc.

**Novello, Ivor** (1893–1951). British actor, dramatist, and composer. Son of Clara Novello



Ivor Novello,  
British actor

Davies, he was born at Cardiff, Jan. 15, 1893, and educated at Magdalen College school, Oxford, making his début on the stage in *Deburau* at the Ambassadors', 1921. He was already famous for his song of the First Great War, *Keep the Home Fires Burning*. As a romantic actor he had a great following in his own musical plays and light comedies. The first plays to achieve success, *The Rat*, 1924, and *The Truth Game*, 1928, were written in collaboration with Constance Collier; *Symphony in Two Flats* followed in 1929, *Fresh Fields* in 1933. His musical plays began with *Glamorous Night*, 1935, followed by *Careless Rapture*, *Crest of the Wave*, *The Dancing Years* (filmed 1950), *Perchance to Dream*, and *King's Rhapsody*. He died March 6, 1951.

**Novello, Vincent** (1781–1861). British composer. Born in London, Sept. 6, 1781, of mixed Italian and English parentage, he became a chorister in the Sardinian Chapel and later an organ-

ist. He died Aug. 11, 1861. He was a founder of the London Philharmonic Society, composed church music, masses, etc., and edited collections of sacred music. The publication of these by himself was the beginning of the business of Novello and Co., actually founded, 1861, by his son Joseph (1810–96).



After Sir E. P. Novello

**November.** Eleventh month of the Christian calendar, the ninth in the old Roman calendar, whence its name from Lat. *novem*, nine. The Anglo-Saxons called it *Wind-monath*, and also *Blód-monath* (blood month), from the practice of slaughtering cattle during this month, to be salted for the winter.

**Noverre, Jean Georges** (1727–1810). French choreographer. Born in Paris, March 29, 1727, he composed his first ballet for the Opéra Comique in 1747, and later devised the choreography for works by Gluck. He was invited to London by Garrick in 1755, though his influence was greatest at Stuttgart. Noverre's celebrated *Lettres sur la Danse*, 1758, did much to free the art of ballet from conventions. He was ballet master at the Paris Opéra, 1775–89. He died Nov. 19, 1819. Consult *Life*, D. Lynham, 1950.

**Novgorod.** A town of the R.S.F.S.R., capital of a region of the same name. It stands on the Volkhov, N. of Lake Ilmen, 100 m. S.S.E. of Leningrad. Here are a kremlin, the cathedral of S. Sophia, a palace of Catherine II, and a monument commemorating the expulsion of the French in 1812. It is an agricultural centre with distilleries, flourmills, and meat packing factories. Pop. (est.) 30,000.

The region, well forested, produces timber, lignite, limestone, and refractory clays. Matches, plywood, pottery, and glass are made; flax, wheat, and potatoes grown, and there is some dairy farming. Area 20,700 sq. m. Pop. (est.) 1,050,000.

Novgorod dates from 862, when it was the capital of the Scandinavian chief Rurik; it remained the Russian capital until replaced by Kiev in the 10th century. In the 12th century, when Novgorod was the centre of a great republic, the pop. grew to 400,000; it was

almost destroyed by Ivan the Terrible in 1570. A rly. junction, it was a key city in German attacks on Leningrad during the Second Great War. The Germans took it Aug. 21, 1941, and held it until Jan. 20, 1944, when the Red Army recaptured it by storm.

**Novi Bazar**, NOVI PAZAR, OR YENIPASAR. Town of Yugoslavia, in S.W. Serbia. Situated on the Rashka, a tributary of the Ibar, it is about 130 m. due S. of Belgrade, and is strategically important as a road junction. It frequently figured in Serbian history in the Middle Ages. Under the Turks it was fortified, and was the chief town of the sanjak of Novi Bazar, part of the vilayet of Kossovo. After the treaty of Berlin, 1878, the sanjak was garrisoned by Austrian troops, and held until 1908, when Austria annexed Bosnia-Herzegovina, but retired from the sanjak. During the first Balkan War the town and sanjak were occupied by Serbians and Montenegrins, and as the result of these two wars the sanjak was divided between Serbia and Montenegro in 1913.

**Novi Ligure**. Town of Italy, in the prov. of Alessandria, Piedmont, 14 m. S.E. of Alessandria. Silk weaving is the chief industry. Here on Aug. 15, 1799, the combined Russians and Austrians defeated the French, who lost their general, Joubert, and 10,000 men. The French were victorious in the same locality on Nov. 6. Pop. (1951) 23,086.

**Novi Sad** (Ger. Neusatz; Mag. Ujvidem). Town of Yugoslavia, capital of Vojvodina. It is about 42 m. N.W. of Belgrade. Founded in the middle of the 18th century, it was almost completely destroyed during the revolution of 1848-49 but grew later into a prosperous town with a cathedral, the seat of a Greek Orthodox bishopric. Pottery and cotton goods are produced, and there is a large airport. Novi Sad, occupied by Hungarian troops, 1941, was liberated by Tito's partisans, Oct. 25, 1944. Pop. (1953) 83,223.

**Novocaine**. Local anaesthetic. A para-aminobenzoyldiethyl-amino-ethanol hydrochloride, it is included in the British Pharmacopoeia under the name of procaine hydrochloride. Novocaine is used in surgery in a similar manner to cocaine, but is more stable in solution, less toxic, and does not cause addiction.

**Novorossiisk**. Town and seaport of the R.S.F.S.R., in Krasnodar region. Standing on the Black Sea 60 m. W.S.W. of

Krasnodar, it is connected by rly. with Rostov. Its formerly large export trade in grain has been superseded by the production and shipping of cement; it also makes bicycles, furniture, textiles, and agricultural machinery. During the Second Great War it was captured by the Germans, Sept. 5-11, 1942. Russian forces retook it after five days' violent street fighting, Sept. 16, 1943. Pop. (est.) 100,000.

**Novosibirsk** Town of the R.S.F.S.R., capital of a region of the same name. A village of 5,000 in 1900, by 1939 it had become an industrial city of 405,600. In the Ural area, on the Ob, the northern terminus of the Turk Sib rly., it is a rly. junction for Omsk, Tomsk, and Barnaul. It has metallurgical works, flour- and saw-mills, and makes cotton goods, plastics, bicycles, soap and perfumery. Here is the first theatre built in W. Siberia for opera and ballet. Pop. (est.) 750,000.

Novosibirsk region is a dairy-farming and wheat growing area, with flour mills, meat canning factories, and distilleries in the towns. Area 69,000 sq. m. Pop. (est.) 2,100,000.

**Nowgong**. Town of Madhya Union, India, formerly a cantonment. It lies 15 m. N.W. of Chhatarpur. Rajkumar College, for the education of the sons of Indian chiefs, founded by the chiefs of Bundelkhand in memory of Lord Mayo, was opened here in 1875.

**Nowgong**. Dist. and town of Assam, India. The dist., area 3,898 sq. m., lies S. of the Brahmaputra. Although almost the whole area is cultivable, less than one-tenth is tilled, rice and oil seeds being the chief crops. The town is on the Kalang, a left-bank tributary of the Brahmaputra. Pop. (1951) dist., 886,955; town, 281,257.

**Noyes**, ALFRED (b. 1880). British poet. Born in Staffs, Sept. 16, 1880, he was educated at Exeter College, Oxford, and published his first book of verse, *The Loom of Years*, in 1902. He wrote lyrics notable for their easy, flowing resonance, several being set to music by Elgar and other composers. His *Flower of Old Japan* was arranged as a cantata by Coleridge.



Alfred Noyes  
British poet

Taylor. Early volumes included *Drake*, 1906; *Forty Singing Seamen*, 1907; *The Enchanted Isle*, 1909. A poetic drama, *Robin Hood*, was produced in 1927; *Ballads and Poems* appeared in 1928; an epic poem on science, *The Torchbearers*, was issued in 1937. Noyes also published *The Return of the Scarecrow* (novel), 1929; *The Unknown God* (philosophy), 1934; *The Edge of the Abyss*, 1944; *Two Worlds of Memory* (autobiography), 1953. He was professor of English literature at Princeton University during 1914-23.

**Noyon**. French town, in the Oise department, 67 m. N.E. of Paris. It is famous as the birthplace of Calvin; for a treaty between Francis I and the future emperor Charles V in 1516; and for its cathedral (destroyed in the First Great War) founded by Pepin the Short c. 760, and in parts unfinished. In Roman times called *Noviomagus*, Noyon was a bishopric 531-1790, and for some time a royal residence of the Franks. Noyon is important as an agricultural centre. It figures in Stevenson's *An Inland Voyage*. Pop. (1954) 7,299.

**Nu** (b. 1906). Burmese politician. Born at Wakewa and educated at Rangoon, with his friend U Aung San he developed a strong nationalist bent. He was imprisoned in 1940 for seditious activities, but was released by the Japanese invaders in 1942 and made foreign minister in the puppet government. In 1945, on the advance of British forces, he changed sides, and helped to form the anti-fascist people's freedom league against the Japanese, which after the war formed a govt. accepted by the British as the provisional govt. On the assassination of U Aung San in 1947, Nu (who at this time ceased to use the title "thakin," uncle, and adopted that of U) took over leadership of the executive council and visited London to sign the treaty which granted independence to Burma. He became the first prime minister of the Union of Burma in 1948. He published *Burma* under the Japanese, 1954.

**Nuba**. Negro people, most of them in the Dar Nuba region of Kordofan province, Sudan. Dark,



U Nu.  
Burmese politician



woolly-haired, stoutly built, and muscular, they are an aboriginal stock driven into the hills by Baggara and other Sudanese "Arabs" of the plains. They usually go unclad. Their personal ornamentation—lip-plugs, tooth-mutilation, and scar-tattooing—attests cultural relationship with the Nilotic Negroes. *Consult* The Nuba, S. F. Nadel, 1947.

**Nubia.** Name formerly applied to a large region of N. Africa extending on both sides of the Nile from Egypt to Abyssinia which forms roughly the republic of Sudan. Nubia was part of the ancient kingdom of Ethiopia, and was divided into Nubia Proper or Lower Nubia, extending from near Assuan to Dongola, and Upper Nubia, extending to and including parts of the Equatorial provs.

**Nuble.** Inland prov. of Chile. Sloping from the Andes to Concepción, it is level and fertile in the W., and produces wheat, cattle, and timber. The vine is cultivated, and an excellent wine made. The capital is Chillán. Area 5,485 sq. m. Pop. (1952) 251,342.

**Nucellus.** Botanical term applied to the tissue which constitutes the main body of a young ovule. It is homologous with a megasporangium wall, for within it the nucleus of a specially prominent cell undergoes meiosis to initiate female gametophytic structures. Around it there grow up one or two tissue layers which become the integument(s) of the ovule. The nucellus may be a bulky tissue, as it is in most gymnosperms and some angiosperms, *e.g.* dock, caltha, tulip, or it may consist of a few cells—even of one cell layer only.

**Nuclear Fission.** Term in physics properly confined to those instances of "atom splitting" in which a heavy nucleus divides into two fragments of approximately equal size; each of these becomes the nucleus of a new atom occupying a mid position in the periodic table. It was produced by Hahn and Strassman in 1939 by the neutron bombardment of uranium, but it can be artificially induced by other kinds of bombardment, and it also occurs naturally. The process releases nuclear energy of the order of about 200 MeV, and is usually accompanied by the emission of several neutrons. In certain circumstances (*e.g.* with uranium 235 or plutonium, in sufficient quantity), these secondary neutrons can produce fission in neighbouring nuclei, and the process can grow into an atomic explosion. In

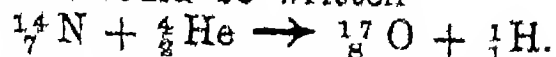
other circumstances (*e.g.* with uranium 238, thorium, or protactinium), where the energy of most of the secondary neutrons is not sufficient to provoke fission in neighbouring nuclei, the reaction rapidly dies out. *See* Atom. *Consult* Applied Atomic Power, Smith and Fox, 1947.

**Nuclear Physics.** Branch of physics concerned with changes in the nuclei of atoms, often called less precisely atomic physics. It started in 1904 with Rutherford's explanation of radio-activity as a spontaneous disintegration of atomic nuclei, and began to take on practical importance with the demonstration of artificial nuclear disintegrations by Rutherford and Soddy in 1919. Rapid development, stimulated by the Second Great War, followed the discovery of nuclear fission by Professor Otto Hahn in 1939.

Current theory pictures the nucleus of an atom as a collection of neutrons and protons held together by strong binding forces the nature of which is uncertain. Both protons and neutrons have a radius of about  $1.3 \times 10^{-13}$  cm., and the radius of most nuclei suggests that the particles are packed together tightly inside it. In fact, nuclei appear to behave rather like minute drops of a liquid which is incompressible and hence of constant density.

The binding energy can be measured by the extent to which the mass of any given nucleus falls short of the sum of the masses of all the protons and neutrons contained in it (the mass defect). The relation is given by Einstein's equation  $E = mc^2$ . The mass defect divided by the total number of nucleons (protons plus neutrons) is called the packing fraction.

Nuclear changes and reactions can be represented by nuclear equations in much the same way as changes in the constitution of molecules by chemical equations. For this purpose nuclei are represented by their chemical symbol, to which are added two numbers: the mass number or total number of nucleons above, and the atomic number or number of protons below. Thus when Rutherford and Soddy bombarded nitrogen atoms with  $\alpha$ -particles (helium nuclei) and turned them into oxygen atoms, with the emission of protons (hydrogen nuclei), the reaction could be written



Later a contracted form became usual, in which  $\alpha$  represents an alpha particle or helium nucleus;

p, a proton or hydrogen nucleus; d, a deuteron or deuterium nucleus; n, a neutron;  $\gamma$ , a gamma ray, etc.; *e.g.*  $^{14}_7\text{N}(\alpha p)^{17}_8\text{O}$ . This was then called an ( $\alpha p$ ) reaction, and other reactions were classified as ( $p\alpha$ ), ( $dp$ ), ( $dn$ ), ( $n\alpha$ ), ( $n\gamma$ ), ( $\gamma\gamma$ ), ( $n2n$ ), etc.

In this nuclear chemistry, as in ordinary chemistry, the particles and electric charges on one side must all be accounted for in the result; and a balance of energy must also be established. Some nuclear reactions, like the transmutation of nitrogen into oxygen, are accompanied by a release of energy to the surroundings; others absorb energy from the bombarding particle. In both kinds of reaction, an energy of at least several million electron volts is required to enable a positively charged particle (proton, deuteron,  $\alpha$ -particle) to approach and enter a positively charged nucleus against the ordinary electrical repulsion (Coulomb forces). Neutrons and  $\gamma$ -rays experience no such potential barrier.

The number of nuclear reactions which have been brought about and observed is very considerable. They are promoted by charged particles accelerated in cyclotrons, synchrotrons, and similar machines; and by the dense streams of neutrons available in nuclear reactors (atomic piles). The probable result of any particular bombardment can usually be predicted by wave mechanics. In this way innumerable transmutations have been achieved, new elements such as neptunium, plutonium, americium, curium, berkelium, and californium created, and new (frequently radio-active) isotopes of almost every known element produced.

**Nucleus** (Lat., kernel). Biological term applied to that specially differentiated portion of the protoplasm of most animal and plant cells which contains a large proportion of the readily stainable material, chromatin. A nucleus is more or less rounded and is normally bounded by a delicate nuclear membrane, just within which is a net-like chromatin containing nuclear reticulum with one or more aggregations of chromatin called nucleoli attached. The residue of its volume is nuclear sap. The nucleus is essential for many of the cell's activities and bears many heritable characters. When cell division is pending the reticulum condenses to form rod-shaped chromosomes of which the number is constant for the type of organism.

**Nudism.** The practice of sun-bathing, swimming, and playing outdoor games without clothes. Nudist clubs probably started in pre-Nazi Germany, and developed slowly in Great Britain, although the movement was given an impetus by warm summers in 1933-35 and showed signs of recruiting newcomers after the Second Great War. Those who practise nudism in clubs where both sexes and all ages mingle together out of doors claim that they derive, apart from the obvious physical benefit of sunlight, a mental freshening from the absence of restraint and pose in conversation and the abeyance of social and professional distinctions.

**Nueces.** River of Texas, U.S.A. Rising in Edwards co., in the S. of the state, it flows 315 m. S. and S.E. to Corpus Christi Bay, in the Gulf of Mexico. It drains an area of nearly 19,000 sq. m., and provides much water for irrigation.

**Nuéé Ardente** (Fr., glowing cloud). Cloud caused by the explosion or sudden frothing of gas-charged lava escaping from a volcano while under great pressure. The mixture of burning and expanding gas and hot pumice fragments forms a great cauliflower type cloud which, because of the solid material it contains, is heavy and so avalanches down the side of the volcano. On May 8, 1902, the city of St. Pierre, capital of Martinique, was totally destroyed with 30,000 inhabitants by such a cloud from Mt. Pelée. They are not always glowing; some are black, as was observed at St. Vincent on May 6, 1902, when some 1,600 people were killed by a blast. Their temperature may be over 700° C.; they move quickly and silently.

**Nuer.** Nilotic Negro people, tall, dark, of slender physique, inhabiting the marshy grasslands to the S. of the Sobat-Nile confluence, most of them in Upper Nile Province, Sudan. Their main interest centres in their cattle which supply the bulk of their daily necessities. In the dry season they migrate to the river banks in search of pasture, in the rainy season they return to inland villages to cultivate millet, beans, etc. They are organized into acephalous tribes, with an intricate patrilineal lineage and clan system. They number some 250,000.

**Nueva Cáceres** OR NAGA. City of the Philippines, capital of the prov. of Ambos Camarines, Luzon. It is situated on the Naga r. at the foot of Mt. Isarog, 145 m. E.S.E. of Manila, and contains a cathedral, bishop's palace, and normal school.

**Nueva Esparta.** Insular state of N. Venezuela, on the Caribbean Sea. It includes Margarita and adjacent islands, and its capital is La Asunción. There are important pearl fisheries. Area, 490 sq. m. Pop. (1950) 75,899.

**Nuevo Laredo.** Border town of Mexico, on the Rio Grande immediately opposite Laredo in Texas, U.S.A. It is the main point of entry into N. Mexico from the U.S.A.

**Nuevo León.** Interior northern state of Mexico. It lies partly on the slopes of the eastern Sierra Nevada. None of its many rivers is navigable for any distance. The soil yields sugar and cereals. Stock raising is engaged in, and zinc, silver, and lead are mined. A rly. service radiates from Monterrey, the capital. Pop. (1950) 740,191.

**Nuffield, WILLIAM RICHARD MORRIS, 1ST VISCOUNT** (b. 1877). British industrialist. Born at



Viscount Nuffield,  
British industrialist

Cowley, Oxfordshire, Oct. 10, 1877, he became an apprentice in a small cycle-shop in Oxford in 1894. He soon set up in business as a cycle manufacturer, and raced with machines of his own construction, winning seven county championships in 1900. From the manufacture of cycles he turned to that of motor-cycles, and in 1912 began the production of the Morris-Oxford light car, which achieved great popularity.

The business thrived during the First Great War, and after it Morris embarked on a large-scale scheme of mass production. His great organizing ability rapidly established Morris Motors, Ltd., as one of the largest car manufacturers in the U.K.; by 1926 the output had reached 100,000 cars a year. Morris widened his market by acquiring the Wolseley, M.G., Riley, and other companies. He was made a baronet 1929, a baron 1934, a viscount 1938, C.H. 1958. His gifts to hospitals, to Oxford University, and to the Royal College of Surgeons, totalled several millions (*see also* Nuffield Foundation). During the Second Great War he organized Nuffield Centres for service men's welfare. He retired from active chairmanship of his companies in 1952.

**Nuffield College.** Graduate college of Oxford University, for the foundation of which Lord

Nuffield gave, in 1937, £1,000,000, including a site worth £100,000. It began work in existing buildings, the college building being constructed 1949-58, and consists of a warden, fellows, and students engaged in research in social studies.

**Nuffield Foundation.** Trust fund set up by Lord Nuffield in Feb., 1943. Its resources are the Nuffield Fund of £10,000,000 provided by Lord Nuffield, and the Oliver Bird fund of £450,000 held on trust for the promotion of research into the prevention and cure of rheumatism. The objects of the foundation are the advancement of health and the prevention and relief of sickness; the advancement of social well-being, in particular by scientific research; the care and comfort of the aged poor; the advancement of education. The h.q. is Nuffield Lodge, Regent's Park, London, N.W.1.

**Nuisance** (Fr. *nuisance*, anything injurious). In English law, anything that does harm or causes inconvenience. Nuisances are classified as public and private. Public nuisances are of many kinds. There are nuisances which are injurious to the public health, such as having on one's property foul drains, sewers, and the like; these are dealt with under the Public Health Acts by the local authorities, who have power, in the last resort, to "abate" them at the expense of the owner or occupier of the property. Nuisances to highways consist of doing acts which cause obstruction to the roads. Nuisances to rivers and streams include polluting their waters or obstructing their flow.

Private nuisances are, or may be, somewhat different. A public nuisance may also be a private nuisance if it causes particular loss, damage, or inconvenience to one person more than it causes to the public generally. Thus, if a man next door to a shop erects an obstruction on the pathway, so that customers cannot enter the shop, it is a private nuisance to the owner as well as being a nuisance to the highway. The general principle of the law of nuisance is that a man shall not use his property so as to cause loss and damage to his neighbour. The remedy for private nuisance is by injunction and damages; and an action can be brought against anyone who continues the nuisance as well as against him who started it.

**Nukualofa.** Capital of the Friendly Islands. Situated on the N. coast of the island of Tongatabu.



it is connected by direct steamer service with New Zealand. There is a radio and cable station.

**Nullity** (Lat. *nullus*, none). The state of being null or void. In England the term is chiefly used in a legal sense. A nullity of marriage is a proceeding in the divorce court to declare a marriage null and void. See Divorce.

**Numantia**. Ancient stronghold of the Arevaci in N. Spain, on the Douro, near Soria. The centre of the struggle between the Romans and the Celtiberians from 154 to 133 B.C., it withstood several sieges and defeated a whole Roman army in 137. The garrison of some 6,000 to 8,000 Spaniards was eventually obliged to capitulate through starvation after a 15 months' siege (134-133 B.C.) by 60,000 men under Scipio Aemilianus. The Roman town of Numantia was afterwards built on the site.

**Numa Pompilius**. Second of the seven legendary kings of ancient Rome. He is reputed to have reigned from 715 to 673 B.C. A man of peace, instructed in sacred lore by the nymph Egeria (*q.v.*), he first established the priestly offices of the Roman state.

**Number** (Lat. *numerus*). In grammar, that attribute of a word which expresses unity or plurality. In addition to singular and plural, there was also a dual number which survives in some Indo-European dialects and in the Semitic languages.

**Number**. A notion widely understood but difficult to define. It begins with the natural numbers 1, 2, 3, 4, . . . It is clear that both the sum and the product of any two of these is itself a number of the sequence. To include all differences, it is necessary to extend the sequence backwards to zero and negative numbers. To include all quotients it is necessary to fill in the gaps with fractions of the form  $p/q$  where  $p$  and  $q$  are integers and  $q \neq 0$ . This completes the set of rational real numbers. Any number which is a root of an equation of the form

$$a_0x^n + a_1x^{n-1} + \dots + a_n = 0$$

is called an algebraic number. To account for all the roots of such equations it is necessary to introduce irrational numbers (*q.v.*) such as  $\sqrt{2}$ ,  $\sqrt[3]{4}$ , etc., which cannot be expressed in the form  $p/q$ ; and complex numbers involving square roots of negative quantities, now usually written in the general form  $a + bi$ , where  $i^2 = -1$ .

There remain the transcendental (non-algebraic) numbers such as  $\pi$ ,

e, and most of the trigonometrical, hyperbolic, and higher functions, which also cannot be expressed in the form  $p/q$ .

Efforts to analyse and define the concept of number more closely have started from the theory of sets, and arrived at the definition of an integer as the class of all classes that can be put into one-to-one correspondence with a given class (*e.g.* five is the class of all classes whose members can be paired off with the fingers of a hand, and so on).

**Number of the Beast**, THE, OR APOCALYPTIC NUMBER. A mystical or symbolical number occurring in the apocalyptic vision of the Beasts in the N.T. book of Revelation. The reference is in Rev. 13, v. 18: "He that hath understanding, let him count the number of the beast; for it is the number of a man: and his number is Six hundred and sixty and six." The Beast is here equivalent to the Antichrist who will for a time gain dominion over the whole world, but in the end will be overthrown by the angels of God (Rev. 14, vv. 14 ff.; 15, vv. 1 ff.). The number is supposed to represent the sum of the numerical values of some proper name, written in Hebrew or Greek letters, and attempts have been made to identify the Beast with various historical characters. Since 616 appears as a variant of 666 (Rev. 13, v. 18), a favourite identification is with the Roman emperor Nero (Neron Caesar—666; Nero Caesar—616: in Hebrew letters). Many other identifications have been suggested, *e.g.* Mahomet, Luther, Napoleon I, William II of Germany, Adolf Hitler. See Antichrist.

**Numbers**. Fourth book of the Pentateuch. It takes its title from the Septuagint, the book being so called because it contains accounts of two numberings of the children of Israel. The Hebrew title is In the Wilderness. Three divisions may be distinguished: (a) the first census and other events preparatory to the departure from Sinai, Num. 1-10, v. 28; (b) the journey from Sinai to Moab, Num. 10, v. 29 to 25, v. 18; (c) the second census, the appointment of Joshua as Moses' successor, and other events, Num. 26-36. Within these divisions there are a number of sections which form part of the so-called Priestly Code (Num. 1-10, 17-19, 25-31, 33-36). The poetic utterances of Balaam (Num. 23, 24) belong to the more ancient documents of the Hexateuch.

**Numbers**, THEORY OF. An extensive branch of mathematics,

concerned with the investigation of the nature of numbers, the characteristics of numbers, and the relations of numbers one with another. The subject has exercised the minds and occupied the time of famous mathematicians from the ancient Greeks (Pythagoras, 561-500 B.C.) to the present day. It has had a profound influence on mathematical ideas and methods, for some of the greatest mathematicians, including Gauss, have been strongly attracted to the study of numbers, and in their search for general solutions to various problems have made discoveries or evolved methods of great value. For example, the attempt to prove Fermat's Last Theorem of 1637 A.D. (it is impossible to separate a cube into two cubes, a fourth power into two fourth powers, or generally, anything above the second into two powers of the same degree; that is,  $x^n + y^n = a^n$  cannot be solved in integers) has during the last 300 years underlain an immense amount of mathematical research.

Gauss's *Disquisitiones Arithmeticae* (Arithmetical Researches, 1801) is one of the masterpieces of mathematics, and inspired much of the discoveries of Jacobi, Eisenstein, Henry Smith, Kummer, Riemann, Kronecker, Hermite, Dedekind, and others. The book deals with the Theory of Congruences (the laws governing the divisibility of one number or set of numbers by others, and those governing the remainder from such division) and with the Theory of Forms (the various ways in which numbers can be expressed, particularly in equational forms, and the conditions for and the methods of securing the integral solution of equations).

**Numeral**. Figure or symbol used to represent number. Undoubtedly the earliest way of representing numbers was by means of notches on a stick and by perpendicular strokes. The system now in use in most civilized countries, employing the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, is partly Hindu and partly Arabic. The scale of tens is probably derived from the number of the human fingers. The value of a numeral under this system varies according to its position, *e.g.* the 7 in the numbers 7, 71, 716, 7,164 represents 7 units, 7 tens, 7 hundreds, and 7 thousands respectively, and this way of writing numbers gradually came into use in India about A.D. 500 and spread slowly through Europe. The use of the decimal point, with

corresponding results in the alteration of the value of the figure after it according to its position, is of uncertain origin.

The fundamental tens group, *i.e.* 10, 100, 1,000, 1,000,000, etc., are given distinctive names, *e.g.* ten, hundred, thousand, million, etc., and repetition of these names and those of the figures 0, 1-9 enable any particular number to be remembered, instead of a fresh name having to be remembered for every individual number. As an example, 2,408,924 is in full two million, four hundred and eight thousand, nine hundred and twenty four. The terms billion, trillion, etc., usually mean a million millions, a million million millions, etc., though in France and the U.S.A. a billion is taken to be a thousand millions only.

Though the above system has survived practically all others, the

Roman numerals are still used for certain purposes, *e.g.* dates. The symbols I, II, III, IIII explain themselves, but the origins of others in the system are not all certain. X for ten is probably I with a stroke across it, a symbol that must have come into very early use, and V for five is the upper half of the symbol X, as L and D for 50 and 500 are probably half the symbols once used for C and M, 100 and 1,000 respectively. The letters C and M are the initial letters of the Latin words for 100 and 1,000, *centum* and *mille* respectively. The use of IV and IX, etc., are later modifications of IIII and VIIII.

The Greeks used a system of numerals in which the numbers 1 to 9 were represented by the first nine letters of the alphabet, the tens by the next nine letters, and the hundreds up to 1,000 by

another nine letters, two obsolete letters being revived for the purpose of the system. Like other ancient systems, apart from the Hindu-Arabic, it proved too cumbersome for mathematical use, and became obsolete. See Arithmetic: Decimal; Number.

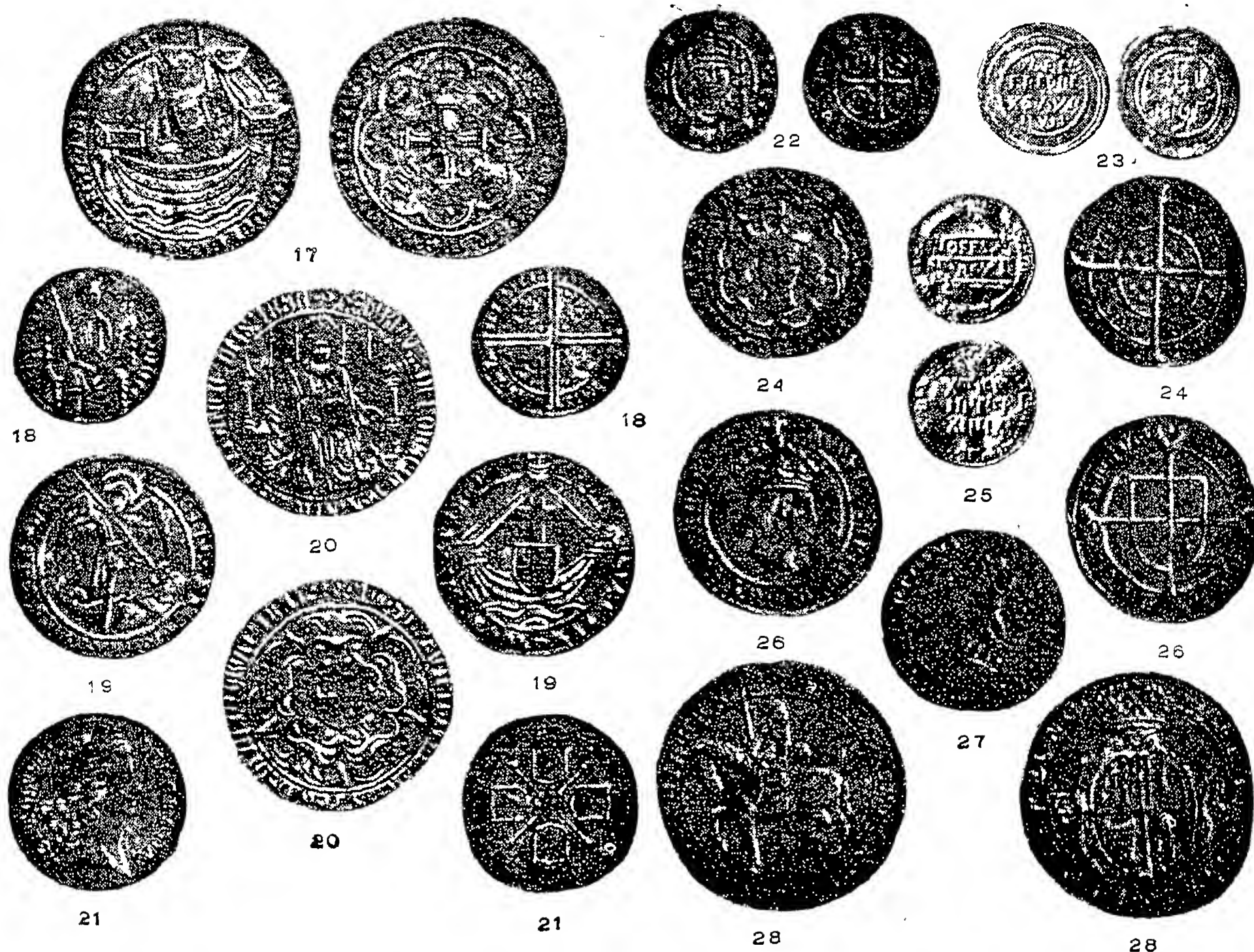
**Numidia.** Roman prov. of N. Africa, between the provs. of Africa and Mauritania, corresponding to E. Algeria. The name means land of nomads. Masinissa (*q.v.*) united the country with Roman aid, 201 B.C. On the overthrow of Jugurtha (*q.v.*) the Romans conquered Numidia, but left it under its own kings. Juba I having sided with Pompey, Julius Caesar made Numidia a Roman province, 46 B.C., but in 25 B.C. Augustus gave the W. part to Juba II (*see* Juba). The Numidians provided light cavalry for the Carthaginian, and later for the Roman army



Numismatics. Specimens of ancient Greek and Roman coins. 1. Cyzicus, c. 580 B.C., electrum stater. 2. Croesus, c. 555 B.C., gold. 3. Athens, 580-480 B.C., silver. 4. Athens, c. 550 B.C., silver tetradrachm. 5. Corinth, c. 600 B.C., silver. 6. Philip II, c. 359-336 B.C., gold stater. 7. Philip II, silver. 8. Chalcidice, c. 392 B.C., silver stater. 9. Alexander the Great, c. 320 B.C., silver tetradrachm. 10. Alexander the Great, gold stater. 11. Thurium, c. 450 B.C., silver. 12. Syracuse, c. 413-400 B.C., silver. 13. Roman silver denarius, c. 269 B.C. bronze as. 15. Julius Caesar, c. 50 B.C., gold. 16. Octavian, c. A.D. 1, silver. See p. 6150.

From specimens in the British Museum





Numismatics (continued from p. 6149). English coins. 17. Edward III, gold noble. 18. Henry III, gold penny. 19. Henry VI, gold angel. 20. Henry VII, gold sovereign, the first issued. 21. Charles II, guinea. 22. William I, silver penny. 23. Alfred, offering penny. 24. Henry VI, silver groat. 25. Offa, earliest Anglo-Saxon gold coin. 26. Henry VII, silver, shilling. 27. Elizabeth, sixpence. 28. Charles I, half-crown

From specimens in the British Museum

## NUMISMATICS: THE STUDY OF COINS

Sir George Hill, formerly Keeper, Dept. of Coins, Br. Museum

*Here is related the history of coins, companion articles being Coinage; Mint. See also Gold; Medals; and the articles on the various coins, e.g. Franc, Mark; Napoleon; Peso; Shilling, etc.*

Numismatics (Gr. *nomisma*, a coin) is the science of coins and other similar objects, such as medals. Coins may be defined briefly as pieces of more or less precious metal (usually gold, silver, copper, bronze, or some other copper alloy), serving as a medium of exchange, and marked by the issuing authority with some device (type) or inscription as a guarantee of good quality and definite quantity; this is to ensure their currency as far as the authority extends. By its intrinsic value, corresponding more or less exactly to its face value, the coin is distinguished from the mere token or from paper money; it is distinguished from the medal by the fact that it serves as a medium of exchange.

The invention of coinage, by the Greeks in Asia Minor in the 7th century B.C., by the Chinese perhaps about the same time, was the first stage in the development of commerce. From the 7th century

onwards coinage also reflects, sometimes very closely, the general development of culture, throwing light on political and economic history, geography, religion, and art.

The earliest coins of the Greeks were of electrum, a natural mixture of gold and silver found in the river-sands of Asia Minor. In Greece Proper, where gold was not found, the earliest coins, such as those of Aegina, Athens, and Corinth, were of silver. Croesus, king of Lydia, 561 to 546 B.C., was the first ruler to issue coins of pure gold. Philip II of Macedon (359–336 B.C.) initiated a currency of gold and silver which, with the coinage of Alexander the Great, may be regarded as the chief international currency of the ancient world. Alexander's conquests led to the institution of coinage in lands which had hitherto used more primitive methods of exchange. The Jews had no coinage of their own before the middle of the 2nd century B.C.

In the Western world, the Greek colonies, especially in S. Italy and Sicily, had their coinages from the 6th century onwards. The Sicilian series, taken as a whole, ranks in artistic value above any other in the whole history of coinage, the 10-drachm pieces (so-called medalions) of Syracuse, first struck at the end of the 5th century, being perhaps the most famous example of the art. The Roman coinage, which from the first was under Greek influence, begins in the second half of the 4th century, with the *as* and its parts in bronze, at first, owing to its large size, cast, not struck from dies as is the rule for coins; the silver *denarius*, for long the standard denomination in the ancient world, was instituted in the 2nd. cent., weighing 4.55 grammes. The Roman coinage of gold, normally restricted to the sovereign power, did not become regular until the Imperial period. The Byzantine Empire continued the traditions of the Roman coinage, its gold coin or besant being an international unit of currency.

The decay of the Roman Empire, and the rise of the modern nationalities, are faithfully reflected in the style of their coinages. In the

7th century the first Mahomedan coins made their appearance; although, as the representation of living objects was forbidden, they had little influence on the artistic side, they were soon serious rivals to the Byzantine gold in international currency. It was, however, not until the 13th century that the nations of western Europe began to possess a regular gold currency, and this began with the florin of Florence, first coined in 1252, and the ducat of Venice, first coined in 1280. The English silver penny sterling, for its good quality, was largely imitated on the European Continent, especially in the Low Countries, during the 13th and 14th centuries.

The institution of the larger denomination of the *gros* by Louis IX in France, an example soon followed by other countries, robbed the smaller denomination of some of its prestige. The first English regular currency of gold, the noble, was begun in 1344.

From this time onwards the development of European coinage becomes extremely complicated. Among the northern nations, the best period of the coinage is the 14th century, although the practical absence of portraiture robs it of one source of interest. The coinage of the Renaissance in Germany was racially characteristic in its combination of vigour of portraiture with lack of refinement.

In Italy the highest level is reached in the portrait coins of the end of the 15th century, but the noblest contribution of Italy to numismatic art is in the cast medal. Antonio Pisano of Verona (first half of the 15th century), the founder of modern medallic art, and also by far its greatest exponent, is surpassed by few artists of any kind as a master of dignified portraiture and fine design. No other country produced medallists of the same quality as the best Italians, although Germany in the 16th century developed a characteristically vigorous but unimaginative school of portraiture; and in the 17th century, France in Guillaume Dupré and England in Thomas Simon could boast of portrait medallists of very high rank.

#### Development of Striking

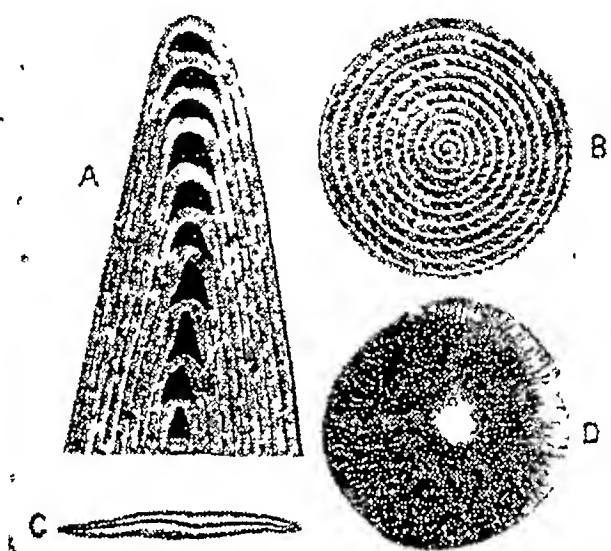
During the 16th century the technique of striking, as distinct from casting, medals was rapidly developed, by no means to the advantage of the art, which lost in significance what it gained in skill. The old method of striking the metal between dies with a sledgehammer was gradually replaced by a press worked with a screw, which was firmly established in most

countries in the second half of the 16th century, and by the second half of the 17th century superseded the primitive method. Technically speaking, perhaps the most remarkable examples of the art of striking coins were produced during this last period; Thomas Simon's *Petition Crown* (1663), with an inscription struck on its edge begging Charles II to give him employment, has scarcely any technical rival.

The 18th and 19th centuries show for the most part a deplorable falling off in the art of coinage, which is hardly redeemed by 20th century attempts at revival which have been made, chiefly in France.

#### Colonial Minting

The history of the colonies outside Europe is illustrated from the 16th century by a coinage often very primitive in kind; among the most interesting being the issues of the early Spanish and English colonies in America, and the



Nummulite. Diagrams illustrating formation of fossil shell. A. Highly magnified vertical section of part of shell showing construction of air chambers. B. Horizontal bisection, showing spiral of chambers. C. Vertical bisection. D. Shell viewed from above

adaptations in the West Indies of Spanish coins to local use by counter-marking, etc. In Asia, important series of coins were issued by some of the Portuguese and Dutch colonies.

India had possessed a coinage quite as early as the time of Alexander the Great, in the shape of small punch-marked pieces of silver. Greek influence, beginning with the purely Greek coins of the kings of Bactria in the 3rd century, is continued through the coinage of the Indo-Scythic rulers, and still traceable in the extraordinarily rich gold coinage of the Gupta dynasty, contemporary with the earlier centuries of the Roman Empire. The medieval coinage of India, both under native rulers and under the Mahomedan dynasties, was enormous, and fills innumerable gaps in the scanty historical records of the country.

China is thought to have begun to use coins as early as the 6th or

7th century B.C. these were cast in bronze in the shape of knives and other primitive media of exchange; the hole at the end of the handle, by which they were strung together, was probably the origin of the hole in the later Chinese copper cash. Japan derived the style of its coinage from China. The S.E. portion of Asia has used some remarkable examples of primitive currency, the metal being cast in the shape of snail-shells or in ingots of other primitive forms.

*Bibliography.* British Museum Catalogue of Coins, 1873; Currency of the Farther East, J. H. S. Lockhart, 1895-98; Manual of Musalman Numismatics, O. Codrington, 1904; Historia Numorum, B. V. Kead, 2nd ed., 1911; Evolution of Coinage, G. Macdonald, 1916; History of Ancient Coinage, P. Gardner, 1918; Coins of India, C. J. Brown, 1922; Handbook of Roman Coins, H. Mattingly, 1927; Corpus of Italian Medals of the Renaissance, G. F. Hill, 1930; Handbook of English Coins, G. C. Brooke, 1932; Handbook of Greek Coins, C. T. Seltman, 1933; Coins of the Modern World, M. Comencini, 1937.

**Nummulite** (Lat. *nummus*, coin). Genus of fossil foraminifera. The shells are remarkable for being flattened and circular, resembling coins, and yet containing a large number of chambers arranged in a spiral. The genus was abundant during the Eocene. Limestones of that period composed chiefly of nummulites are sometimes several hundred ft. in thickness, and are particularly noticeable in the Alps, N. Africa, Asia, and Cen. America.

**Nun** (Lat. *nonna*, an elderly woman, mother, or nurse). Word adopted by the early Church for a woman consecrated to a life of devotion. By the beginning of the 4th century there were communities of consecrated virgins in Egypt, and a little later in Italy also. The Council of Saragossa forbade the veil to be assumed before the age of 40. The Council of Carthage prescribed 25 as the earliest age; S. Basil suggested 17.

It was understood almost from the first that the dedication of a nun was for life; but it was not regarded as absolutely irrevocable until the establishment of the Benedictine Rule. Nuns were consecrated or professed by the bishop of the diocese or his representative; and all convents of women were under his jurisdiction and general supervision. The habit, veil, etc., forming the characteristic garb of a nun, are of early date and a modification of the ordinary dress of women in ancient times.

The term nun is only correctly applied to a female member of the



Benedictine Order, or of one of the orders springing from it. Women belonging to the Carmelite, Franciscan, and Dominican orders are called sisters, as are the members of many modern congregations of women, whether contemplative or active. Most recent congregations follow some modification of the Augustinian Rule.

**Nunatak.** Isolated piece of rock, possibly the peak of a buried mt., projecting through a continental ice-sheet. Nunataks have been observed near the edge of the Greenland ice-cap.

**Nunc Dimittis** (Lat., now lettest thou). Opening words of a Latin canticle or hymn. They are used as its title in the version in English in the Book of Common Prayer, which begins Lord, now lettest Thou Thy servant depart in peace. It is the song of Simeon (Luke 2, vv. 29-32), his hymn of praise and thanksgiving on being permitted to see the infant Saviour. From early times the Christian Church has used the hymn at vespers or at compline. In the Anglican Church it is sung after the second lesson at evensong.

**Nuncio** (Lat. *nuntius*, a messenger). General term for a diplomatic representative of the pope, acting with powers restricted by his instructions. The members of the Polish diet were called nuncios.

**Nuncomar** OR NANDA KUMAR (d. 1775). Indian official. Governor of Hooghli in 1756, he was deputy to the nawab of Murshidabad when Warren Hastings was appointed resident there in 1758. Discovered in treasonable correspondence against the East India Company, he was sent to Calcutta in 1770, and there implicated in charges of corruption brought against the diwans of Bengal and Bihar. In 1775 he accused Hastings, then governor-general of India, of peculation. Before the matter had been gone into by the council, Nuncomar was arrested on a charge of forgery, tried before Sir Elijah Impey, found guilty, and executed. When Hastings was impeached in 1788, one of the charges was that he was responsible for the judicial murder of Nuncomar; he was acquitted on this, as on the other, charges. Impey, threatened with impeachment on a similar and other charges, defended himself with vigour, and his impeachment was dropped.

**Nuneaton.** Borough and market town of Warwickshire, England. It is on the little river Anker, 97 m. N.W. of London and

9 m. N. of Coventry, and is served by rly. and canal. The chief buildings are the churches of S. Nicolas, S. Mary, and Chilvers Coton; the council house and law courts; Arbury Hall; a grammar school dating from the 16th century and a college for the poor, 1712. Industries are coalmining, wool spinning, the making of bricks, pipes, and tiles, textiles, including hosiery, felt hats, silks, rayon, and leather goods, light engineering, and rly. work. Nuneaton grew up round a house for Benedictine nuns founded in 1150. There are a few remains of the nunnery. The bor. (created 1907) gives its name to a co. constituency. George Eliot (*q.v.*) was born at Arbury Farm. Market day, Sat. Pop. (1951) 54,408.

**Nuñez Cabeza de Vaca**, ALVARO (c. 1490-c. 1564). Spanish explorer. In 1527 he sailed from Spain with an expedition which met with disaster in the Gulf of Mexico, but Nuñez reached land, and after a most adventurous journey reached the city of Mexico in 1536, and returned to Spain. In 1540 he was appointed governor of the provinces of the La Plata river, and reached Asunción in 1542. The colonists rebelled and sent him home in 1545, and later he was sentenced to banishment. On being pardoned he was made a judge. Nuñez wrote an account of his first expedition (Eng. trans. 1851).

**Nuñez de Arce**, GASPAR (1834-1903). Spanish poet and politician. Born Aug. 4, 1834, at Valladolid, he was intended for a priest, but, refusing to adopt that vocation, he went to Madrid and became a journalist. He was still a youth when his first play was produced. Later he served as a war correspondent in Africa. Soon he was conducting a paper of his own, and in 1865 he entered political life, his liberal views having attracted attention. In 1868 he was made governor of Barcelona, and during 1882-90 was a cabinet minister, being in turn in charge of the colonies, home affairs, finance, and education. He died at Madrid, Feb. 12, 1903. His lyrics are considered his best work.

**Nunhead.** District of S.E. London. It is E. of Peckham Rye, and forms part of the bor. of Camberwell. It has a rly. station, a cemetery of 50 acres, consecrated in 1840, and the underground Beachcroft reservoir of the Metropolitan Water Board.

**Nunkiang.** Former province of Manchuria, China. It had an area

of 23,912 sq. m., and a population of about 2,500,000. At the reorganization of Manchuria by the Communist government in 1950 it lost its identity and was absorbed in an enlarged Heilungkiang province.

**Nun Moth.** Popular name for a black and white moth (*Liparis monacha*) called in Britain the Black Arches. In central Europe it is a great pest, since its caterpillars destroy the leaves of spruce and other trees. In Bohemia an attack lasting for four years defoliated over 90,000 acres of forest. Experimental control of poison dust liberated from aeroplanes gave encouraging results.

**Nunn**, SIR PERCY (1870-1944). British educationist. Educated at Bristol university, he was a secondary school teacher, and in 1905 was appointed vice-principal of the London day training college, succeeding as principal in 1922. Ten years later, when the college was transferred to the control of London university, he continued in office as director until 1936. He also represented London university on the teachers' registration council, and was visiting professor at Columbia university in 1925. He wrote extensively on educational methods, *e.g.* Education Reform, 1917; Education: its Data and First Principles, 1920. He was knighted in 1930. Nunn died Nov. 12, 1944.

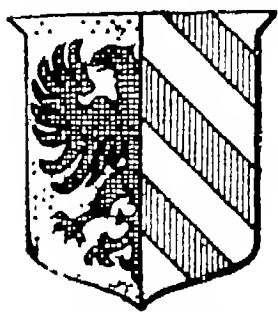
**Nupe.** District of Africa, now part of Nigeria. It forms the Niger (formerly Nupe) prov.; the capital is Bida. About the middle of the 19th century the country came under the rule of the Fulas. The British took possession of it in 1897, but only temporarily, its real absorption taking place in 1901, when a new emir, favourable to British interests, replaced a deposed one.

**Nuraghe.** Prehistoric round tower in Sardinia. The typical form is of rough-coursed blocks, clay-mortared, having a basal diameter of about 30 ft., sloping slightly inwards. From the doorway, usually facing S., a corridor leads to an inner chamber, about 15 ft. across, with a vaulted roof. On the right of the entrance is a guard-niche, on the left an ascent to an upper chamber, similarly guarded. Traces of 6,000 have been found, mostly of the Bronze Age. Some of the largest, protected by platforms with flanking towers, are surrounded by smaller nuraghi. See illus. opposite.

**Nur-ed-din** (c. 1118-1174). Syrian warrior. A Muslim, born at Damascus, in about 1145 he

succeeded his father as ruler of a state in Syria, making Aleppo his capital. During the Second Crusade he took Damascus and drove the Christians from Syria. In 1159, however, he was beaten by Baldwin, king of Jerusalem, but later sent into Egypt an army which conquered that country from the caliph. An uncle of Saladin, Nur-ed-din died May 15, 1174. Another Nur-ed-din was an astronomer. Born in Morocco, he lived in the 12th century, and wrote an astronomical work of some note.

**Nuremberg** (Ger. Nürnberg). Second largest city of Bavaria, Germany. It is the capital of the



**Nuremberg arms** junction and occupied a key position on the Rhine-Main-Danube canal system. Until the Second Great War the city possessed unrivalled relics of its historic past, whole streets being virtually unaltered from medieval times. They centred upon the burgrave's castle and the imperial castle, dating respectively from the 11th and 13th centuries.

The 15th-cent. house of Dürer and the 16th-cent. house of Hans Sachs were noteworthy private houses, and there were numerous churches of great historic value, e.g. S. Sebaldus (13th cent.), S. Lawrence (13th-15th cent.), the Holy Ghost (1331), S. Aegidius, with a Van Dyck altar (1140, rebuilt 1711-18), S. James (14th cent.), S. Peter (15th cent.), S. Rochus (16th cent.)

Of other public buildings the town hall was remarkable, being erected 1332-40, with additions dating from 1520 and a beautiful renaissance wing of 1616-22. The grammar school was founded by Melanchthon in 1526.

Nuremberg has a long and chequered history, having become a free city in 1219 and being endowed with unusual privileges—rights of coinage, customs rights, urban laws and judges, and the ownership of the castle and its surroundings. It traded with all European countries, especially in silks, oriental goods, and various

products of its artists and craftsmen. The first watches, known as "Nuremberg eggs," are said to have been made here. During the 15th and 16th centuries many of the greatest German painters, sculptors, poets, and scientists lived in the town. During the Thirty Years' War it fell into decay, and was embodied with Bavaria in 1806 when she joined the Rhenish federation. In the later 19th century the industrial importance of Nuremberg again increased, when its toys, pencils, and beer became widely known. The establishment of a large factory by Siemens Electric, and other large engineering works, brought additional prosperity to the town. Pop. (1955 est.) 418,950.

During the Second Great War Nuremberg, which had been the scene of the annual Nazi party congress, was repeatedly bombed by Allied aircraft, much of the old town being virtually destroyed. It was entered by units of the U.S. 7th army on April 16, 1945. S.S. troops defended it bitterly, but all organized resistance ceased on April 20. The town was, after the end of the war, included in the U.S. zone of occupation. The trial of the major war criminals (see Nuremberg Trials) was held here.

#### Nuremberg Laws.

Series of anti-Semitic edicts promulgated at the German Nazi party conference at Nuremberg, Sept., 1935. One edict, the Reich citizens' law, deprived Jews of their rights as German citizens, and reduced them to a status called "members of the state"; this deprived the Jew of the vote, forbade him to serve in the armed forces, and excluded him from

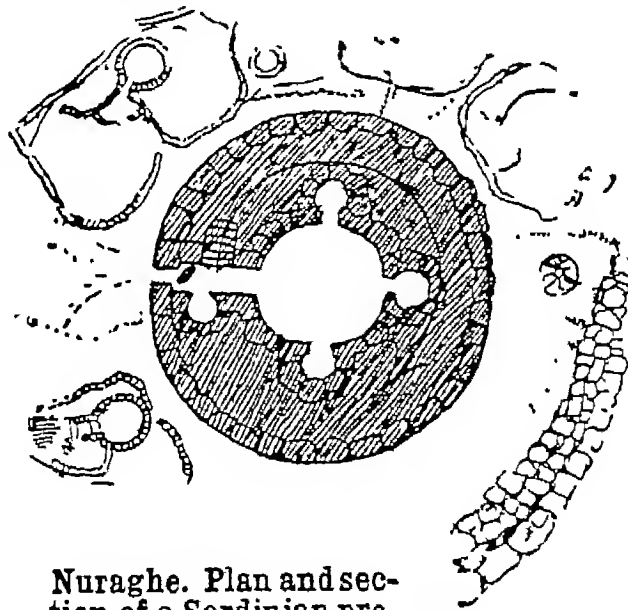
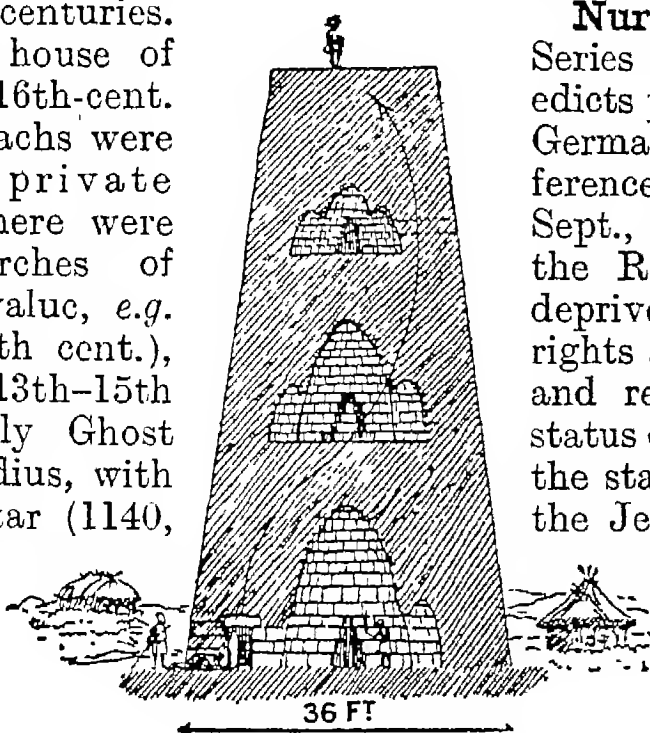
participating in the cultural life of the country. Another edict, the protection of German blood and German honour, prohibited marriage or extra-marital relations between Jews and so-called Aryans. Any Jew contravening the measure, even before the passage of the law, was liable to a long term of imprisonment. "Aryans" were required to leave any house where there were resident Jews, and no Jewish household with adult males might employ female domestic servants under the age of 45.

Within certain limits, the original Nuremberg Laws permitted Jews their own religion, culture, and social economy. Later the laws became more severe, notably after the assassination of the German diplomat Ernst vom Rath by a Polish Jew in Paris, Nov. 7, 1938. Jews were then excluded from places of entertainment, deprived of the right of inheritance, made liable to heavy poll taxes, forbidden to practise any of the professions or engage in journalism; their passports were withdrawn, and they were held collectively responsible and were collectively fined for any individual Jew's offence or alleged offence. Jewish premises were required to be marked with a distinctive sign, while Jews themselves had to wear a distinguishing mark (the Star of David) on their clothing.

Jews were thus reduced to the status of complete social outcasts in obedience to the Nazi doctrine that a permanent barrier must be erected between German and Jew. The Nuremberg Laws formed the pattern of the anti-Jewish legislation introduced into fascist Italy and other German satellites, as well as, during the Second Great War, into German-occupied territory. See Anti-Semitism; Germany in the Second Great War; Jews.

**Nuremberg Trials.** Trials of the civil and military leaders of Nazi Germany, together with certain Nazi organizations, by international military tribunal at Nuremberg, Nov. 20, 1945-Oct. 1, 1946.

In Oct., 1943, a United Nations war crimes commission was set up in London to collect evidence for the preparation of an indictment against Axis and satellite war leaders. A declaration by the foreign ministers of Great Britain, the U.S.A., and the U.S.S.R. proclaimed that at the time of any armistice to any govt. which might be set up in defeated Germany, such Germans as had been responsible for, or



Nuraghe. Plan and section of a Sardinian prehistoric round tower. The spiral line seen in the section shows the position of the staircase. See text in facing page



consenting parties to, atrocities, massacres, or executions alleged against them should be sent back to the countries in which their crimes had been committed and there tried by local laws. The major criminals, whose offences had no particular geographical location, were to be arraigned and tried by joint decision of the Allied govts.

After the surrender of Germany legal experts of the U.K., U.S.A., U.S.S.R., and France met in London on June 26, 1945. Their conference resulted in the four-power agreement of Aug. 8, setting up an international military tribunal for the trial of war criminals whose crimes had no precise geographical location. The law under which defendants were to be tried was to be international law, not the law of the victorious countries.

#### Members of the Tribunal

The tribunal, as established by the charter, comprised the following members and alternate members: U.K., Sir Geoffrey Lawrence (president), Sir Norman Birkett (alternate); U.S.A., Francis Biddle, Justice John J. Parker (alternate); France, Prof. D. de Vabres, R. Falco (alternate); U.S.S.R., Maj.-Gen. I. Nikitchenko, Lt.-Col. A. Volchkov (alternate). Chief prosecuting counsel were Sir Hartley Shawcross, British attorney general; R. H. Jackson, U.S.A.; F. de Menthon, France; and Gen. Rudenko, U.S.S.R.

This tribunal was given the following powers: (1) to summon witnesses to the trial and require their attendance and testimony; (2) to interrogate any defendant; (3) to require the production of documents and other material evidence.

The tribunal was not to be bound by the technical rules of evidence, and was relieved of any obligation to require proof of facts of common knowledge, though it was required to take judicial notice of government and U.N. documents and reports. It was authorised to impose a capital sentence or any other punishment it deemed just; and to deprive the convicted person of any stolen property and order its surrender to the Allied control council for Germany. The judgement of the tribunal was final and not subject to appeal, and in case of guilt the sentences were to be carried out in accordance with the orders of the control council, which was authorised to reduce or otherwise alter the

sentences at any time it considered fit, but not to increase their severity. Neither the tribunal nor its members or their alternates could be challenged by prosecution, defendants, or counsel. Decisions of the tribunal were by majority vote, the president having a casting vote.

The function of counsel for the defendant was allowed to be discharged at the defendant's request by any person professionally qualified to plead in courts of the defendant's country, or by any person authorised by the tribunal. All court proceedings had to be conducted in, and all official documents submitted on either side had to be translated into, English, French, Russian, and the language of the defendant. The indictment was required to include full particulars specifying in detail the charges against the defendants. Every defendant had the right to produce evidence in support of his defence and to cross-examine witnesses called for the prosecution.

The permanent seat of the tribunal was at Berlin, but the trial itself was held at Nuremberg in the U.S. sector. The U.S. army was made responsible for guarding the prisoners, the press arrangements, and the elaborate system of headphones and interpreters for simultaneous translation of the proceedings into the four languages. During the course of the trial the defendants were kept in rigid solitary confinement. They were deprived of all insignia of rank and fed on army rations. They were forbidden to possess any article likely to facilitate self-injury; and as a precaution against suicide each prisoner was watched by guards day and night.

#### Indictment on Four Counts

On Aug. 29 a committee of the four chief prosecuting counsel issued from London a first list of criminals to be tried. There were four counts of the indictment, charging the defendants with (1) conspiring, or having a common plan, to commit crimes against peace; (2) committing specific crimes against peace by planning, preparing, initiating, and waging wars of aggression against a number of states; (3) war crimes, i.e. murder and ill-treatment in occupied territory or on the high seas, deportation for slave labour, murder and ill-treatment of prisoners of war, killing of hostages, plunder and devastation of property; (4) crimes against humanity, i.e.

murder, extermination, enslavement, and deportation committed against civilian populations before and during the war, and political, racial, and religious persecution.

The 24 accused were:

Hermann Goering  
Joachim von Ribbentrop  
Rudolf Hess  
Ernst Kaltenbrunner  
Alfred Rosenberg  
Hans Frank  
Martin Bormann  
Wilhelm Frick  
Robert Ley  
Fritz Sauckel  
Albert Speer  
Walter Funk  
Hjalmar Schacht  
Franz von Papen  
Gustav Krupp  
Konstantin von Neurath  
Baldur von Schirach  
Arthur Seyss-Inquart  
Julius Streicher  
Wilhelm Keitel  
Alfred Jodl  
Erich Raeder  
Karl Doenitz  
Hans Fritzsche

With the exception of Bormann, who had disappeared in the capture of Berlin, all these defendants had been arrested after the German collapse.

Moreover, the following organizations were declared illegal, and any defendant who had been a member of any of them could be tried and punished on that ground alone: the Reich cabinet, the leadership corps of the Nazi party, the S.S., the Gestapo, the S.A., and the general staff and high command of armed forces.

Ley committed suicide Oct. 25, Kaltenbrunner was ill, and the tribunal decided to defer the trial of Krupp on account of his physical and mental condition; so that only 20 defendants appeared when the trial opened at Nuremberg, Nov. 20. During the 10 months it lasted, 403 open sessions were held; 33 witnesses testified orally for the prosecution; and 61, in addition to 19 of the defendants, for the defence; a further 143 witnesses gave evidence for the defence by written answers, 88,000 affidavits signed by 155,000 persons were submitted for the living defendants and 158,000 were sent in on behalf of the organizations. Much of the evidence tendered by the prosecution was derived from captured German documents, and films of concentration camps were shown.

On Aug. 31, 1946, the tribunal retired to consider its verdict. On Oct. 1 the judgements were read. The general judgement found that a common Nazi plan to prepare and wage war had existed. Certain

defendants had planned and waged aggressive war against 12 nations. War crimes had been committed by Germany on the high seas and in every country occupied by her. The Germans were guilty of crimes against humanity. The leadership corps of the Nazi party and the S.S. were declared

and were discharged. The Russian members of the tribunal added a rider dissociating the U.S.S.R. from the acquittals, and declaring that Hess should have been sentenced to death.

All those whose lives were forfeit, except Kaltenbrunner, appealed to the control council

1946; 22 Cells in Nuremberg. D. M. Kelley (psychiatrist to the prison), 1947; War Crimes Trials, ed. Sir D. M. Fyfe, 1948, etc.

After the main Nuremberg trials, 177 lesser Nazis—diplomats, civil servants, and others—were charged with war crimes at Nuremberg in 12 separate cases brought before U.S. military courts. Of 142 convicted, 24 were sentenced to death by hanging, the others to imprisonment. Two American and 373 German defence counsel were engaged. The last case ended April 15, 1949.

**Nurmahal** (light of the palace). Wife of the Mogul emperor of India Jehangir (reigned 1608-27), famed for her beauty and wit. Her name was later changed to Nur-jehan, light of the world.

**Nurmi**, PAAVO (b. 1897). Finnish runner, born at Åbo (Turku), June 13, 1897. He established world records for the mile in 1923, two miles in 1931, five miles in 1924, six miles in 1930, and ten miles and one hour in 1928. One of the greatest and most consistent long-distance runners of all time, he won six Olympic titles: in 1924 he was champion over 1,500 metres, 5,000 metres, and in the cross-country race. Known as the Flying Finn, Nurmi paid several visits to Great Britain, and won two A.A.A. championships in 1922.

**Nürnberg.** See Nuremberg.

**Nursery Rhymes.** Verses repeated to young children, and often handed down by tradition. The first actual collection is supposed to have been made in Boston, U.S.A., in 1719; the first known British collection, Mother Goose's Melody, was issued about 1760 by John Newbery, and comprised but 30 pieces. It may possibly have been compiled and in part written by Goldsmith. To each rhyme a whimsical moral is appended.

Nursery rhymes are of the most varied origin. Some are believed to contain traces of heathen worship and magical incantations. In others allusions to historical events or political controversies have been suspected. But, in spite of much discussion, few definite results have been attained. Some counting-out rhymes contain Welsh numerals in a corrupt form. Other rhymes, accompanied by action, are probably derived from medieval dances.

References to some rhymes—such as Sing a Song of Sixpence—are to be found in Elizabethan drama. The Wise Men of Gotham (*q.v.*) probably dates from the 16th century. Some rhymes are but



Nuremberg Trials. The chief Nazi defendants face their judges, November 20, 1945. Front row, L. to R., are Goering, Hess, Ribbentrop, Keitel, Rosenberg, Frank, Frick, Streicher, Funk, Schacht. Back row, L. to R., are Doenitz, Raeder, Schirach, Sauckel, Jodl, Papen, Seyss-Inquart, Speer, Neurath, Fritzsche

criminal organizations; the Reich cabinet as such was not, nor were the S.A., the general staff, or high command. The Nazi leadership was guilty on all four counts. Responsibility could not fall on Hitler alone, but must be shared by generals, statesmen, and business men who cooperated with him in his regime.

In the cases of individual defendants, verdicts and sentences (the latter passed in the afternoon of Oct. 1) were as follows: Goering, Ribbentrop, Keitel, Rosenberg, Jodl, guilty on all counts; Kaltenbrunner, Frank, Sauckel, Bormann, guilty on counts 3 and 4; Frick, Seyss-Inquart, guilty on counts 2, 3 and 4; Streicher, guilty on count 4. These twelve were sentenced to death by hanging. The following received life imprisonment: Hess, guilty on counts 1 and 2; Funk (counts 2, 3 and 4); Raeder (counts 1, 2 and 3). Schirach, guilty on count 4, and Speer, on counts 3 and 4, were sentenced to 20 years' imprisonment. Neurath, guilty on all counts but with mitigating circumstances, received 15 years' imprisonment; Doenitz, guilty on counts 2 and 3, received 10 years. Schacht, Papen, and Fritzsche were found not guilty,

for clemency. Goering, Jodl, and Keitel asked to be shot instead of hanged in the event of their pleas being rejected. Hess, Funk, Neurath, and Doenitz appealed for mitigation of their prison sentences. On Oct. 10 the council rejected all appeals and announced that death sentences would be carried out by hanging at Nuremberg prison. On Oct. 15 it was stated that Hess, Funk, Raeder, Speer, Schirach, Neurath, and Doenitz would serve their sentences in Spandau prison, in the British sector of Berlin. Executions were fixed for 1 a.m. of Oct. 16, but at 10.45 p.m. on Oct. 15, Goering was found poisoned in his cell. Execution of the rest, completed by 2.45 a.m., was carried out on two gallows in the gymnasium of the prison by an American sergeant and lance-corporal in the presence of the quadripartite allied commission, doctors, army officers, representatives of the German authorities, eight press representatives, and an official photographer. The bodies were cremated and the ashes disposed of secretly. See War Criminals; also biographies of the individuals in this Encyclopedia. Consult The Nuremberg Documents, P. de Mendelssohn,



surviving scraps from much longer pieces. Others that have definitely taken their places in the corpus of British nursery rhymes are demonstrably modern, and of some the authors are known. A Frog He Would a Wooing Go was written by John Liston, who based it on an earlier series of verses; Wee Willie Winkie was written by the Scottish poet William Miller.

*Bibliography.* Popular Rhymes of Scotland, R. Chambers, 1826; Nursery Rhymes of England, J. O. Halliwell-Phillipps, 1842; Games and Songs of American Children, W. W. Newell, 2nd ed. 1903; Nursery Rhyme Anthology, L. Derwent, 1938.

**Nursery School.** School for children from two to five years of age, i.e. below the age of compulsory school attendance. The purpose of such schools is to provide a healthy, happy environment in which the child can develop physically, mentally, and socially. They bridge the gap between the child welfare clinic and the infant school. The pioneer of nursery schools in the U.K. was Rachel

Macmillan, who planned and operated at Deptford a large open-air school in which children enjoyed benefits at a cost of less than £12 per annum a child. In 1914 she opened a training centre for teachers in open-air nursery schools; in 1930 the Rachel Macmillan training college for teachers was established. Nursery schools are still relatively few. Under the Education Act, 1944, if parents require education for children between 2 and 5, local authorities must provide it, either in special nursery schools or in nursery classes in other schools. In 1946, however, only 6,500 children in England and Wales were attending nursery schools; but 54,000 were attending nursery classes in infant schools, more than 100,000 were in ordinary classes in primary schools, i.e., 9.4 p.c. of all children in the age group were attending school. There is a Nursery School Association of Great Britain, 1 Park Crescent, London, W.1. Consult *The English Nursery School*, Mrs. P. E. Cusden, 1942.

at S. Thomas's Hospital, London, which became the prototype of nurses' training schools in almost every country.

Although a movement towards organization and registration of trained nurses began in England in 1887, and a bill was introduced in 1904, the Nurses Registration Act did not become law until 1919. This Act set up a general nursing council for England and Wales to keep the state register, conduct examinations, and approve training schools. Similar councils were set up in Scotland and Northern Ireland. The register is divided into parts: general trained nurses (S.R.N. = state registered nurse); sick children's nurses (R.S.C.N. = registered sick children's nurse); fever nurses (R.F.N. = registered fever nurse); mental nurses (R.M.N. = registered mental nurse); mental defective nurse (R.N.M.D. = registered nurse, mental defective). State registration is usual in most countries.

As the field of nursing expanded, specialised training was added to hospital instruction. District nursing (founded in 1859 by William Rathbone of Liverpool, with the help of Florence Nightingale) needed special training, and the district nurse with midwifery and public health training as well as three to four years' hospital training is often a very highly qualified woman. Other categories are: the public health nurse, or health visitor as she is known in Great Britain, whose function is almost entirely educational and preventive, as is that of the school nurse; the industrial nurse, who in factories, big stores, hotels, etc., is responsible for the health and welfare of the staff; the private nurse, who attends a patient in his or her own house.

Many nurses take up midwifery, or maternity nursing, in hospital or domiciliary practice, but midwifery, although allied to nursing, is a separate profession, defined by Act of parliament. Nursing overseas in the mission field and elsewhere often necessitates special training in tropical medicine.

#### With the Services

In the U.K. there are permanent nursing services connected with the fighting forces. The Army Nursing Service, the direct descendant of Miss Nightingale's band of ladies in the Crimea, was named, 1902, Queen Alexandra's Imperial Military Nursing Service, renamed, 1949, Queen Alexandra's Royal Army Nursing Corps. Queen Alexandra's Royal Naval Nursing

## NURSING: CARE OF THE SICK

J. Elise Gordon, Editor, *Nursing Mirror and Midwives' Journal*

*The history and scope of nursing is here described, as well as some of the problems associated with it. See also Hospital; Midwife; Nightingale, Florence; Nursing, Male*

Nursing as an art, and as a profession, has been carried on since the earliest days of history. The early Hindus, the Egyptians, and above all the Jews, laid down excellent rules for hygiene and health, and Hippocrates (q.v.) sought 400 years B.C. to inculcate the principles of good nursing.

With the coming of Christianity the care of the sick and suffering assumed new importance, and orders of women were formed specially devoted to nursing. The first woman to be named specifically in connexion with nursing care in the early church was the deaconess Phoebe, but during the centuries of the church's growth others are mentioned by name out of a considerable body of women devoting themselves to succouring the sick. The religious orders of nuns, which flourished from the 5th century onwards, took up the work, and at the time of the Crusades there arose the famous military nursing orders, notably the Knights Hospitallers of S. John of Jerusalem, of Rhodes, and of Malta (an order still in existence and world-wide), the Teutonic Knights, who combined military and nursing duties, and the Knights of S. Lazarus, who devoted

themselves to the service of lepers. Famous medieval saints associated with the care of the sick are S. Francis of Assisi, S. Clare, S. Elizabeth of Hungary, and S. Catherine of Siena. The 12th and 13th centuries also saw the rise of secular nursing orders, such as the Béguines of Flanders, the Franciscans, the Poor Clares. With the decay of the religious orders in Protestant countries, nursing was relegated to ignorant and sometimes unscrupulous persons, such as those depicted by Charles Dickens in *Sairey Gamp* and *Betsey Prig*. But in 1836 Theodor Fliedner and his wife set up at Kaiserswerth, Germany, a hospital where women were trained in nursing. From this model, deaconesses' hospitals sprang up in many parts of the world; and from it—even more important—Florence Nightingale received inspiration for her great work. Her influence upon contemporary nursing has never been properly assessed, and 20th century practice has not even yet caught up with all her ideas. Following her practical demonstration of military nursing in the Crimea, which shook the world, she founded the famous training school for nurses

Service, a much smaller body, was formed in 1902; Princess Mary's R.A.F. Nursing Service in 1918. Queen Elizabeth's colonial nursing service, the prison nursing service, the ministry of Pensions nursing service, the industrial nurses employed in royal ordnance factories, and the Civil Nursing Reserve formed during the Second Great War complete the govt. dept. nursing services.

The Nurses Act, 1943, limited the use of the term nurse (though not the right to practise as a nurse) to certain specified categories, and authorised the setting up of the assistant nurses roll, and training for the assistant nurse. By 1946 there were more than 37,000 state enrolled assistant nurses (S.E.A.N.).

#### Ministry of Health Inquiries

The British ministry of Health set up a division of nursing and midwifery in 1941, with a chief nursing officer and assistants; the ministry of Labour and National Service has a nursing services branch, with a principal nursing officer, concerned with recruitment. A committee for England and Wales, under the chairmanship of Lord Rushcliffe, appointed by the ministry of Health in 1941, reported in 1943 advocating improvements in salaries and conditions of work, which were accepted by the govt.; similar improvements for Scotland and Northern Ireland were put into effect; these and subsequent improvements did not provide enough nurses to meet the ever increasing number needed, although the British nursing force increased by more than 15,000 between 1938 and 1945. A working party set up Jan., 1946, to consider recruitment and training reported in Sept., 1947, emphasising the importance of loss of students in training through dislike of hospital discipline, hours and pressure of work, and other causes, and recommending reorganization to ease the strain on both teachers and taught. The Nurses Act, 1949, authorised the minister of health to set up a standing training committee in each of the 14 hospital areas of England and Wales, and gave the general nursing council power to finance training, and to admit to the register some nurses (*e.g.* those trained abroad) formerly excluded.

The International Council of Nurses, inaugurated 1899 by a British nurse, Mrs. Bedford Fenwick (the first of all international women's organizations), is a federation of national nurses' associa-

tions (32 belonged to it in 1939) with four major interests: (1) the professional, social, and economic welfare of nurses; (2) nursing education; (3) nursing service; (4) legislation as it affects nurses and nursing. Committees collect and collate information. Conferences are held in different countries, usually at four-yearly intervals; that held at Atlantic City, U.S.A., in 1947 was, however, the first for ten years. A golden jubilee congress was fixed for Stockholm in 1949. The H.Q. is at 19, Queen's Gate, London, S.W.7. The National Council of Nurses of Great Britain and Northern Ireland (at 17 Portland Place, London, W.1) is a federation of professional nursing organizations in the U.K.

Another organization with international interests, with H.Q. at 45, Gloucester Place, London, W.1, is the Florence Nightingale International Foundation, set up in 1934 as a memorial to Miss Nightingale, the function of which is to provide postgraduate nursing courses for nurses of various countries.

Postgraduate training for nurses in the U.K. is carried out by various bodies, including a few university faculties which offer a diploma in nursing. There is scope, however, for much more, and the British Empire nurses war memorial fund, founded 1946 (through the Nursing Mirror, a professional weekly journal for nurses) as a memorial to the 3,000 nurses and auxiliaries of the British Commonwealth who gave their lives in the Second Great War, had as its object the provision of postgraduate travelling scholarships for nurses, as well as the creation of a memorial chapel in Westminster Abbey. To this fund, the nurses of the British Commonwealth themselves subscribed the first £50,000.

The International Red Cross is in many countries responsible for professional nursing training, for which purpose it runs training hospitals; in the U.K. it is concerned with the training in home nursing and first aid of auxiliaries and voluntary workers.

**Nursing, MALE.** In mental hospitals men nurses care for male patients. Their training, similar to that of women nurses, is carried out in mental hospitals recognized as training schools by the Royal Medical Psychological Association. They sit for the same examinations as women; and their conditions of service are also governed by the

Rushcliffe committee's recommendations. *See* Nursing.

**Nursing, ROYAL COLLEGE OF.** Professional organization founded 1916. It has a membership of over 43,000 registered nurses, and a junior branch, the Student Nurses' Association, composed of over 15,000 persons in training. It aims at improving the status of nursing as a profession; at presenting the views of state registered nurses on problems of their work, and negotiating on their behalf; and at promoting post-certificate nursing education. Area organizers act as links between h.q. (1a, Henrietta Place, London, W.1) and 180 branches. There are a Scottish board and a committee for N. Ireland. It publishes the Nursing Times weekly. Affiliated to the Royal College are the Association of Sick Children's Hospital Nurses, the Society of Registered Male Nurses, the Society of Mental Nurses, and the National Association of State Enrolled Assistant Nurses.

**Nursing Home.** Home where invalids and others are received for operations, childbirth, rest cures, etc. It must be registered by a local authority. The certificate of registration must be displayed, and the medical officer of health may inspect the home at any time.

**Nut.** Strictly speaking, the dry fruit developed from the carpels of the flower. The carpel contains two or more ovules, but as a rule only one develops into a seed—the kernel of the nut. This is invested by a shell of hard or leathery tissue, which does not split until the seed germinates. The term as used commercially or popularly does not always coincide with the botanical meaning; thus, an acorn is a true nut; a ground-nut is not a nut, but a pod; walnut is the "stone" of a fruit formed like a plum or cherry (drupe); and earth-nut, or pig-nut, is a tuber. Types of true nuts are found in hazel, beech mast, and sweet chestnut. *See* Brazil Nut; Cob-nut; Fruit.

**Nut.** Small piece or block of metal or other material pierced with a hole which is threaded to conform to a standard screw-thread system. It is used in securing a bolt or attaching one member in machinery to another. Nuts for bolts are usually of mild steel, but sometimes of brass, aluminium, or alloy. For common bolts they are square on plan; for engineers' bolts the hexagon is usual. Spanners turn them, and a washer is interposed between the inner surface of the nut and the face of the





Nutcracker. Occasional British visitor, of the crow family

member through which the tail of the bolt protrudes. Nuts to be turned by the fingers are of two kinds; wing-nuts, which have projecting lugs facilitating grip by thumb and fingers; and milled-edge nuts, cylindrical in plan and with a roughened periphery. Lock-nuts incorporating a locking device, and double nuts turning in opposite ways, prevent loosening and back-turning under vibration.

**Nutation.** In astronomy, the oscillatory movement produced in the earth's axis by the attraction of the moon on the equatorial protuberance of the earth. The line of the earth's axis cuts the heavens at a point known as the celestial pole, which describes a circle round the pole of the ecliptic, and this circle is in itself subject to a small disturbance, making the circle a wavy one instead of uniform. This nodding motion is called nutation (Lat. *nuere*, to nod). See Precession.

**Nutcracker** (*Nucifraga caryocatactes*). Bird belonging to the crow family. Widely distributed over Europe and Asia, it is an occasional visitor to Great Britain. The bird is rather smaller than a jackdaw, and has brown plumage spotted with white, except the wings and tail, which are black. It occurs in woods, where it feeds mainly on seeds of conifers and insects. The word is also used as the name for a metal implement used for cracking nuts.

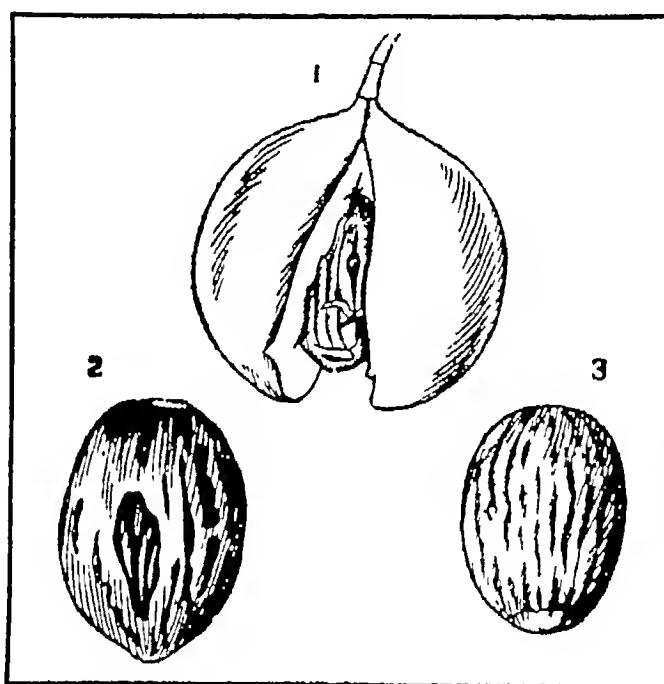
**Nuthatch** (*Sitta*). Genus of birds of the family Sittidae. The common nuthatch, *S. europaea*, is a small bird, fairly common in the S. and Midland counties of England, rare in Scotland, and not found in Ireland. It is about 5 ins.



Nuthatch searching a tree trunk for insects

long; the plumage is bluish grey on the upper parts, with white throat, buff under parts, and grey and black tail. It has the habit of running upwards or downwards over the branches and trunk of a tree like a mouse. It nests in a hole in a tree; and if the hole is large, stops it up with clay, leaving an opening only large enough to pass through. It feeds upon insects and grubs that it finds in crevices in the bark, in search of which it taps the tree like a woodpecker. In autumn it takes partly to a diet of nuts, which it fixes in a crevice in the bark and splits with its beak.

**Nutmeg** (*Myristica fragrans*). Seed of a tree of the family Myristicaceae, native of Malaya. The



Nutmeg. 1. Fruit beginning to open. 2. Nutmeg covered with mace. 3. After removal of mace

tree attains a height of about 30 ft., has large, aromatic, leathery, alternate, evergreen leaves, and small, pale yellow flowers. The small fruits are pear-shaped, containing a single seed (nutmeg), which is invested first with a crimson fibrous network (mace), and externally by a thick, fleshy coat. The tree begins to bear fruit when eight years old, attains its maximum at twenty-five, and continues profitable for another 35 years or so. Nutmeg and mace are used in cookery as a flavouring for custards and puddings; and in medicine as an aromatic, stimulant, and carminative, but chiefly to disguise the taste of less pleasant drugs, such as rhubarb.

**Nutrition.** This subject is discussed under Food and Nutrition.

**Nux Vomica.** Seeds of a small tree, *Strychnos nux-vomica*, member of the family Loganiaceae. A native of India and N. Australia, it has strongly veined, oval, opposite leaves, and panicles of greenish-white tubular flowers. The fruit is a large berry, resembling an orange, with numerous silky-haired, disk-like seeds an

inch across, edible pulp. The dried seeds, ground to powder, yield the alkaloids strychnine, brucine, and loganin.

**Nuzu.** Ancient Mesopotamian town which lay near the city of Arrapkha (mod. Kirkuk), on a site called Yorghana Tepe. In the 15th century B.C., when it was within the kingdom of Mitanni, it was inhabited by a mixed population including Hurrians, whose civilization is known from a series of tablets found in its houses.

**Nyamwezi.** Negroid people of Bantu speech in Tanganyika Territory, E. Africa. Most of them are found living in the highlands between the Victoria Nyanza and Tabora. They are a muscular, dark-brown people, tall, long-nosed, and often curly-haired. The men tend cattle, sheep, and donkeys; the women raise crops.

**Nyanza.** Central African word for lake. It is familiar in English as part of the names of the three lakes which form the main sources of the Nile, namely Victoria Nyanza, Albert Nyanza, Edward Nyanza.

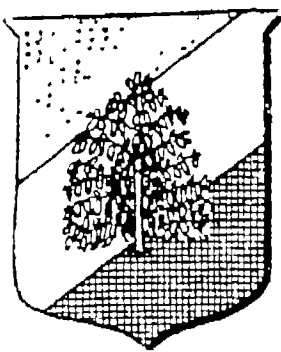
**Nyasa.** Third largest lake in Africa. It is a deep basin about 360 m. long and from 10 to 55 m. wide, lying at an alt. of 1,555 ft., and occupies part of the Great African Rift Valley. Its greatest depth is 386 fathoms. To the N. and E. it is closely approached by lofty mts. and tablelands. The only outlet is the Shire river, issuing at its S. extremity and flowing into the Zambezi. The principal affluents are the Songwe, Rukuru, Bua, and Lintipi on the W. coast. The water of the lake is fresh and its level varies with the amount of the annual rainfall. Fort Johnston, at the S. outlet, Kota-Kota, and Karonga are the most important ports. Lake Nyasa was discovered in 1859 by Livingstone from the S. and Roscher from the E.

**Nyasaland.** British protectorate in central Africa, part of the federation of Rhodesia and Nyasaland. It lies along the W. shores and to the S. of Lake Nyasa. Land area 37,374 sq. m. The S. portion is about 130 m. from the sea. The protectorate is bounded N. by Tanganyika Territory, W. by Rhodesia, S.W. and S.E. by



Nux Vomica. Foliage, flowers, and fruit (A)

Mozambique (Portuguese), and E. by Lake Nyasa. There are two natural divisions, the one consisting of the W. littoral of Lake Nyasa, with the tablelands separating it from the basin of the Loangwa river and the districts between the watershed of the Zambezi and the Shire rivers on the W., and the other on the E., the districts of Lakes Chiuta and Chilwa and the Ruu, with the Shire highlands and Mlanje.



Nyasaland arms

The modern history of Nyasaland dates from Sept., 1859, when Livingstone first reached the southern shores of Lake Nyasa. Livingstone was closely followed by various church missions, which have played an important part in its subsequent history.

The spheres of influence of Great Britain, Germany, and Portugal were defined by agreements made in 1890 and 1891, and the limits of the protectorate were settled by a proclamation of May 14, 1891; in the following spring a British protectorate was proclaimed over the countries adjoining Lake Nyasa. Before that time the territory was part of British Central Africa. From 1893 until 1907 it was known as the British Central Africa Protectorate, but the former name of Nyasaland Protectorate was revived in Oct., 1907. The administrative capital is at Zomba, but the chief town is Blantyre, on the Shire Highlands railway. The protectorate is administered by a governor, assisted by an executive council.

A large portion of the protectorate is mountainous or composed of lofty plateaux rising somewhat abruptly. The principal ranges are the Mlanje Mts., between Lake Chilwa and the river Ruu, of which the highest peak is 9,843 ft. in alt.; the Shire highlands lying E. of the Shire river, of which the highest portion is Mt. Zomba, 7,000 ft.; the Kirk range, W. of the Shire, reaching 7,000 ft.; the Angoniland plateau, at the S.W. end of the lake, reaching 8,000 ft.; and the Mangoche Mts. In addition to Lake Nyasa, there are three considerable lakes, Chilwa or Shirwa, 100 sq. m., Chiuta, 30 m. long, and the swampy Malombe; but the only important river is the Shire.

The most important products are cotton, tobacco, coffee, tea, chillies, rubber, rice, maize, vegetable oils, and soya beans. Most

travel by rly. to Port Herald on the river Shire and to Chindio on the Zambezi, and thence to the mouth of the Zambezi. In April, 1922, a railway line, 175 m. long, from Murraco, on the southern bank of the Zambezi, to Beira in Portuguese East Africa, was opened for traffic. This set up direct rly. connexion between Blantyre and Beira. On March 1, 1935, the great Zambezi bridge was opened, establishing unbroken communications between Nyasaland and Beira. This is the longest railway bridge in the world, 12,004 ft.

The various missions are mainly responsible for education in Nyasaland. The Government maintains the Jeanes training centre, but apart from that its function is to

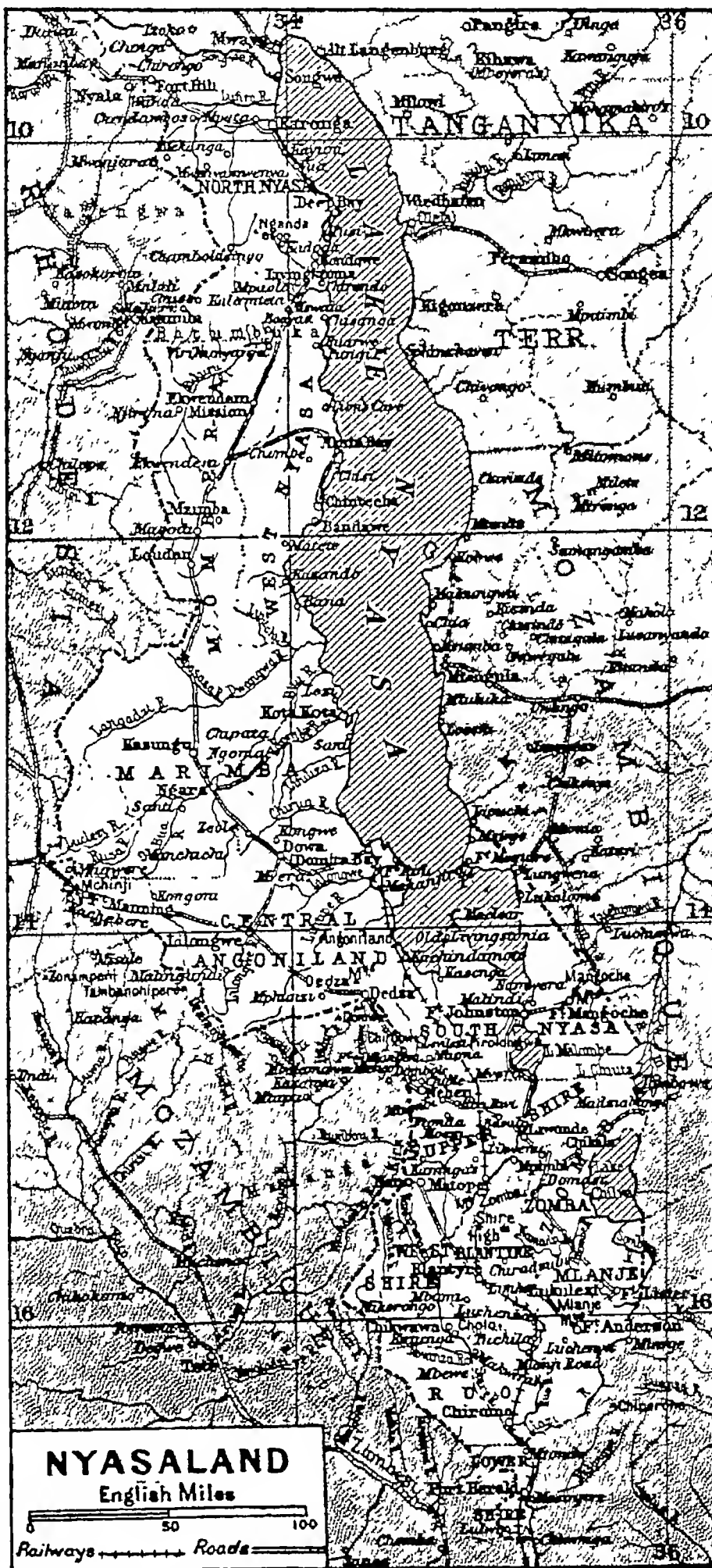
coordinate and advise. The enrolment at the African primary schools is about two-thirds of the children available, but only a small number reach the end of the course. There are elementary schools for European children, but it is considered unwise to keep European children in Nyasaland after the age of 11. They then usually go to S. Rhodesia, where the parents are assisted by substantial financial grants.

At the outbreak of the First Great War prompt action surprised and disabled the German steamer Hermann von Wissmann while on the stocks at Sphinxhaven, and gave the British command of Lake Nyasa. On Sept. 8, 1914, a British force, working N.,

attacked the enemy, whose main body had arrived simultaneously to attack Karonga. This German force was routed. In May, 1915, a naval detachment reached the protectorate, and as reports were received that the Germans were repairing the Hermann von Wissmann, a force went to Sphinxhaven on May 30, disabled the steamer, and captured a large supply of stores and ammunition. In the Second Great War Nyasaland was free from hostilities. Pop. (1956) 3,266,400, of whom 6,700 were Europeans.

**Bibliography.** British Central Africa, Sir H. H. Johnston, 1897; Nyasaland under the Foreign Office, Duff, 2nd ed. 1906; Peace Handbooks No. 95, Nyasaland, 1921; Report on Tea Cultivation, 1933; Emigrant Labour Report, 1935.

**Nyborg.** Port of Denmark, on the E. coast of the island of Fünen. Lying 18 m. by rly. S.E. of



Nyasaland. Map of this British protectorate in the uplands of Central Africa



Odense and one hour by steam ferry from Korsør in Zealand, it has a deep and spacious harbour, and exports cereals. It has a Gothic church and an arsenal housed in an old royal residence. Founded in the 12th century, Nyborg was a fortress until 1867. Here in 1659 the Swedes were defeated by the Danes. Pop. 9,740.

**Nygaardsvold**, JOHAN (1879–1952). Norwegian statesman. Born near Trondhjem, he went to the U.S.A. in 1900, working as a farm labourer and railwayman. Returning to Norway in 1907, he was elected to the *storting* in 1916, and in 1928 became minister of agriculture in the first Norwegian Labour govt. In 1935 he became prime minister, an office he held when the Germans invaded Norway in 1940. After the withdrawal of Allied troops from Norway, Nygaardsvold came to Great Britain with King Haakon and formed the Free Norwegian govt. in London. He returned to Norway as premier after the liberation, but soon retired from active politics. He died March 13, 1952.

**Nyköping**. A port of Sweden, capital of the län or govt. of Södermanland. Situated on a bay of the Baltic 52 m. direct (100 m. by rly.) S.W. of Stockholm, it has a good harbour and a ruined castle, destroyed by the populace in 1317. Nyköping has cloth and engine factories and exports grain and iron ore. Fifteen national diets were held here in the 13th–15th centuries. Pop. (1956) 21,848.

**Nylon**. Generic name coined by the Du Pont Company of America to cover a series of synthetic linear polyamides. The materials were developed as the result of long-term research begun in 1928 by Dr. W. H. Carothers. In chemical structure they are similar to natural silk and wool, but they are obtained from coal which yields phenol, water which yields hydrogen, and air which yields nitrogen and oxygen. From these fundamentals are obtained dibasic acids such as adipic or sebacic, and diamines such as hexamethylene diamine. While the number of possible combinations of these materials theoretically runs into thousands, only about eleven types of nylon were at first developed.

The large-scale manufacture of nylon was started in the U.S.A. in 1940. Its production was rapidly expanded to meet an increasing demand for fibres and also for special plastics used during the Second Great War. To many

people, however, the word nylon became merely a synonym for super-fine fully fashioned stockings, but filaments have been used in the production of bristles for brushes and, made up into ropes, have been utilised for special high duty applications such as glider tow ropes and parachute harness.

The application of nylon as a mouldable plastic has been limited, though it has many advantages, being very light, having a specific gravity of 1.14 compared with 1.30 for cellulose acetate. The injection moulding of nylon calls for high temperatures since it melts at 450° F., and special precautions have also to be taken to deal with its high fluidity when melted. Nylon has a very low inflammability, and is resistant to water, most solvents, grease, oil, alkalis, and weak acids. Bearings made from nylon require no lubricant other than water. In solution the material is used in the production of films for special purposes, and for coating wires and fabrics.

**Nymph** (Gr. *nymphē*). In classical mythology, a localised nature spirit, regarded as a minor deity. Different groups of nymphs were sea and water nymphs, such as the Oceanids, the Nereids, and the Naiads; Oreads, or mountain-nymphs; Dryads and Hamadryads, or tree-nymphs. Temples were not built to them, but offerings of milk and honey were made in grottoes, at fountains, trees, etc. Anyone meeting a nymph became frenzied.

The word nymph is sometimes used for an insect in the stage of development before its last metamorphosis. See Insect; Larva.

**Nymphaeaceae**. A family of aquatic, perennial herbs. Natives of the temperate and tropical regions of the world, they have stout creeping rootstocks, and mostly floating leathery leaves. The flowers are solitary, with three or six sepals, three or more petals (often numerous), and many stamens. It includes the sacred bean (*Nelumbium*), water lilies (*Castalia*, *Nymphaea* and *Victoria*), etc.

**Nymphomania** (Greek, *nymphē*, a bride; *mania*, frenzy). State of excessive sexual desire in women due to disorder of the endocrine glands. More often met with is pseudo-nymphomania, which has a psychological origin. Women afflicted with it generally obtain less than the normal satisfaction from sexual intercourse; the urge which prompts their behaviour is (according to psycho-analysts) unconscious sadism, directed both

against their partners and themselves, with an equally unconscious desire to mutilate the partner.

**Nyon Agreement**. Nine-power "anti-piracy" agreement. A conference met at Nyon, Switzerland, in Sept., 1937, during the Spanish Civil War, to consider measures to check the attacks being made on shipping by submarines of unknown nationality. The adoption of an "anti-piracy" patrol was agreed by Gt. Britain, France, Russia, Turkey, Greece, Yugoslavia, Rumania, Bulgaria, and Egypt. Great Britain and France were to provide naval forces to patrol the Mediterranean, the others being responsible only for their own territorial waters.

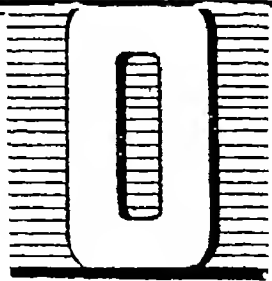
**Nyren**. Name of two English cricketers. Richard Nyren came of a Scottish family, originally Nairn. He was settled in Hampshire by about 1750 when he founded the Hambledon club (see Hambledon). He kept the Bat and Ball Inn, on Broad Halfpenny, and looked after the adjoining ground. Left-handed and one of the finest bowlers of his day, he was also a good batsman. His son John (1764–1837), besides being a cricketer of repute, wrote *The Young Cricketer's Tutor*, comprising full directions for Playing the Elegant and manly Game of Cricket, 1833. John died at Bromley, June 30, 1837. See Cricket.

**Nystad**. Town and seaport of Finland. Called in Finnish Uusi-kaupunki, it is in the district of Abo-Björneborg (Turku-Pori), on the Gulf of Bothnia, 40 m. N.W. of Turku. It has a good harbour and docks, and a considerable trade. The port has direct connexion with the Aaland Islands. The peace of Nystad, 1721, gave Russia extensive Baltic territories.

**Nystagmus**. Oscillating movement of the eyeball, usually lateral, but sometimes vertical or rotatory. The most frequent form is coal-miner's nystagmus, which is due primarily to working in a dim light. It improves if work in the mine is given up. Miners working in open mines to which daylight penetrates do not contract nystagmus. It is a symptom of various nervous disorders, particularly the affection known as disseminated sclerosis. Nystagmus following disease of the nervous system is practically incurable. See Eye.

**Nyx**. In Greek mythology, the personification of night, called Nox by the Romans. Daughter of Chaos, the primal void, and mother of Aether (Heaven) and Hēmera (Day), she is represented as a winged goddess in a chariot.

**O**, the fifteenth letter of the English alphabet, did not represent a vowel in the North-Semitic alphabet (the prototype of all the existing alphabets), but the consonant 'ayin, a kind of guttural breathing. The Greeks, who had no such sound, used it to express both the short and the long vowel *o*. The reason for using 'ayin to represent *o* is not quite clear; but it was the last North-Semitic letter still available. For the short *o* the Greeks used the sign **ⲟ** called *ōmikron* (the small *o*), and for the long *o* the form **Ⲡ**, called *ōmega*



(the big *o*). The Etruscans had no *o*. When the Romans acquired this character they used the form **⓪** or **ⓐ**, and this shape has been retained in present-day alphabets. The conservatism of the **O**-form is unique—modern *o* resembles in shape the early North-Semitic 'ayin of the late second millennium B.C. much more than does the 'ayin in modern Semitic alphabets (such as Hebrew or Arabic).

The minuscule *o* is merely a smaller version of the capital **O**.

**O** Fifteenth letter and fourth vowel of the English and Latin alphabets. As with *e*, it is impossible to give any definite rules for its various sounds and combinations. Its two chief values are long *o*, as in *dote*, short *o*, as in *dot*, which is really the *au*, *aw* heard in *call*, *bawl* shortened. It equals short *u* in *another*, and *oo* in *prove*. It combines freely with other vowels. *Oa* equals long *o* in *boat*, *moat*, but not in *abroad*, *board*; *oe* equals *e* in words of Greek origin, and is now generally so spelt, as in *economy*, *ecology*; in other words it equals long *o* as in *hoe*, *roe*. *Oi*, *oy* in *boiler*, *boy* really equals *aw* plus *i*; *oo* is long in *boon*, and short in *wood*, and in words such as *blood*, *flood* equals short *u*. *Ou* presents a great variety of sounds. See Alphabet; Phonetics.

**Oahu.** The Hawaiian island on which Honolulu stands. Area, 589 sq. m. See Hawaii; Honolulu.

**Oak** (*Quercus*). Large genus of trees of the family Fagaceae, including about 300 species, natives of the N. temperate regions, Indo-Malaya, the Pacific coasts, etc. The typical species is, of course, the British oak (*Q. robur*) whose trunk may be 120 ft. high, with a girth of 60–70 ft., covered with thick rugged bark, which cracks both vertically and horizontally. The branches are massive and tortuous, and in the open spread widely with a downward tendency, producing a dome-shaped mass. The oblong oval leaves are arranged spirally, and their edges are cut into variable lobes. The minute flowers are green and inconspicuous; the fruit nut is known as the acorn (*q.v.*).

Two well-marked British forms of this species are given specific rank by some authorities. In one of these (*sessiliflora*) the leaves have a distinct but variable stalk, and the acorns are seated almost directly on the twig; in the other (*pedunculata*) there is little or no leaf-stalk, and the acorns have long, slender stalks. Several exotic oaks have been introduced to the U.K., and are frequently seen in parks and gardens. The most common are the holm oak (*Q. ilex*) and the Turkey oak (*Q. cerris*) both from S. Europe. The latter was introduced about 1735, and is distinguished by its pyramidal form, its narrower, more acutely lobed leaves, and the long, curled scales of the acorn cup which give it a mossy appearance. Another S. European oak well established in British parks is the

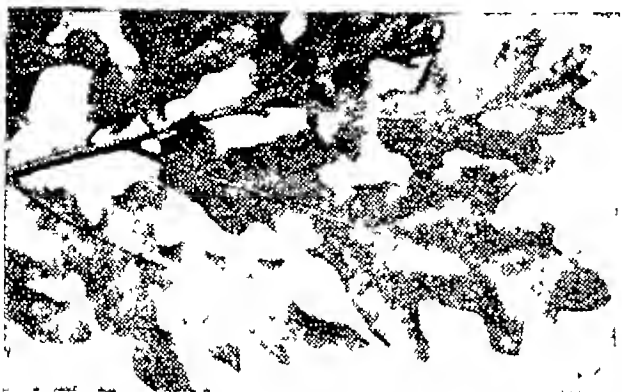


Oak. Specimen of the British oak tree, *Quercus robur*, in full leaf



cork oak (*Q. suber*), and a well-represented N. American species is the dyer's oak, whose large leaves turn orange or dull red in autumn. N. America has over a score of oaks. Several besides British oak yield bark suitable for tanning.

Although the fine-grained, hard oak timber has lost much of its former importance through the introduction of steel girders and framing in structural work, and



Oak. Leaves of a variety of the Turkey oak, *Quercus cerris*

the competition of the more easily worked coniferous woods, it is still employed where endurance and the bearing of strains are needed; also for cabinet making, furniture, and panelling. For this purpose oaks have to be grown closely in woods to produce great length and equal thickness of trunk, and to discourage the production of lateral branches—which were in request in the era of wooden ships. Propagation is effected by the acorns. British oaks thrive best in rich loam.

The British oak is a tree of great longevity, as shown by many existing ruins of former giants, such as the Greendale oak at Welbeck, variously estimated by experts as being from 700 to 1,500 years old; and the Cowthorpe oak near Wetherby, Yorks, considered to have survived for 1,800 years. The tree does not produce any acorns until between 60 and 70 years old, and it does not pay to cut it for timber until it is in its second century. See Forestry.

**OAK FINISHING.** The contemporary finish of oak furniture and woodwork synchronise with the modern art movement. Mouldings, carving, inlay, and other embellishments being discarded in favour of simple design, there must be alternative attraction. If the wood is not painted, the eye must be pleased by its natural beauty. The demand that the wood shall not be hidden by layers of polish is sound aesthetically and represents a reaction against the decadent period of the late 19th century. Oak lends itself specially to this idea.

Theoretically, unpolished oak woodwork is ideal, but in practice the surface soon becomes soiled, so needs protection.

Polishing with raw linseed oil probably gives the best results, but there are difficulties. The oil being rubbed in with a clean white rag, it takes about a month to dry, and the process must be repeated about five times. It is not wise to oil veneered woodwork. For wax polishing, white wax (not paraffin or candle wax) or beeswax is shredded, placed in a jar, and covered with turpentine. The jar having stood for 24 hours, the mixture is rubbed into the grain with a piece of white rag. Applications are made every three or four days, and about four coats should be sufficient. If the process is continually repeated, the grain will eventually be entirely levelled up and the beauty of the wood impaired. While white wax has little effect on the colour, beeswax gives a warmth of tone.

The usual commercial method is to apply one or two thin coats of french polish. If the finish is to be in the natural colour of the wood, the polisher treats the light parts with extremely weak stain before applying the polish. In the finishing process known as weathered oak, the grain pores are filled in with lime before french polish is applied. Japanese oak is best suited for the process, on account of its small grain pores due to slow growth, combined with rich colour.

**Oak Apple.** Popular name for the growth on an oak, properly termed Oak Gall (*q.v.*).

**Oak-Apple Day.** Name given in England to May 29. The birthday of Charles II in 1630, and the day in 1660 on which he rode into London at the Restoration, it was celebrated by royalists, who decorated their houses with branches and leaves of oak, so commemorating also the king's escape from the parliamentary soldiers searching for him after the battle of Worcester, Sept. 3, 1651, when he hid with Colonel Careless in the oak at Boscobel, near Donnington, Salop. Oak-apple day is still observed in many parts of England, notably at the Royal Hospital, Chelsea, as Founder's Day, when the statue of Charles II is decorated with oak-leaves and solemnly saluted.

**Oakengates.** Urban dist. and market town of Shropshire, England. It is 13 m. by rly. E. of Shrewsbury. The chief industries

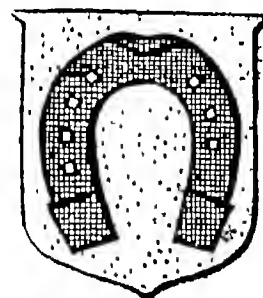
are light engineering and steel and iron works. Market day, Sat. Pop. (1951) 11,659.

**Oak Gall.** Abnormal growth of the surface tissues of the oak caused by attacks of gall-wasps of the family Cynipidae, order Hymenoptera. The female gall-wasp pierces the tissues and deposits her eggs in the punctures, and swelling of the affected part results. These attacks give rise to such familiar objects as spangle galls on the leaves, oak-apple and marble galls on the buds, and galls on the roots. Usually there are two generations of a gall-wasp annually, and the resulting swellings are different. Wasps emerging from the oak-apple galls seek the roots where other galls are produced; wasps from these last ascend the tree and there cause the oak-apple galls of the following year.

Oak Gall. Marble or bullet galls



**Oakham.** Market town and co. town of Rutland, England. It is 94 m. N. by W. of London and 9 m. S.E. of Melton Mowbray, having a rly. station. The principal building is the church of All Saints. The banqueting hall of the castle



Oakham arms

built in the 12th century, is used for county business. Of interest, too, are Flore's House and the butter cross. Boots and shoes and wearing apparel are made. Oakham is also a hunting centre. The lord of the manor has the right to claim a horseshoe from any peer passing for the first time through the town, and there is a collection of these in the castle hall. Market days: cattle, Fri.; general, Wed. and Sat. Pop. (1951) 3,539.

Oakham school was founded in 1584 by Archdeacon Robert Johnson. Its constitution was remodelled in 1875, and it is now a public school with accommodation for about 300 boys. The old school still stands with additional modern buildings.

**Oakland.** City of California, U.S.A., the co. seat of Alameda co. A residential place opposite San Francisco, on the E. shore of San Francisco Bay, it is served by rlys. and has tram and ferry services. With a sub-tropical climate, it is surrounded by

gardens and vineyards. Educational institutions include S. Mary's R.C. college and a Congregational seminary. Oakland has shipbuilding yards, fruit canneries, flour and planing mills, carriage works, and cotton, iron, steel, and leather manufactures. Until the American defeat of Mexico in 1848 and the "gold rush" in the same year, cattle grazed on a Spanish-owned ranch on the site of the city. From a yard supplying timber to the rising city of San Francisco, it developed into a suburb from which 30,000 people travel daily to the metropolis. Since 1936 an 8-mile double-deck steel bridge with six traffic lanes has connected Oakland with San Francisco. Pop. (1950) 384,575.

**Oak Ridge.** Atomic fission plant in the Tennessee valley, U.S.A. Covering 59,000 acres, it was established by the govt. in 1943 as a pilot plant to produce plutonium for the manufacture of the atomic bomb. The site was chosen for its proximity to the T.V.A. power and water facilities and for its remoteness from the coast. Officially known as the Clinton engineer works, Oak Ridge became the largest division of the atomic bomb project, and at the peak of war-time production in 1945 had a pop. of 78,000. Pop. (1950) 30,229.

**Oaks, THE.** English horse-race. It is run at Epsom, normally on the Friday of Derby week. The course is the same as for the Derby, and the race is for fillies three years old. The Oaks was the name of a house in Carshalton, near Epsom, in 1779 the property of the earl of Derby; and it was during a dinner party there that the earl and his friends decided to found the race. During both Great Wars the race was run at Newmarket.

**Oaksey, GEOFFREY LAWRENCE, BARON** (b. 1880). British judge. Son of the 1st Baron Trevethin, he was educated at Haileybury and New College, Oxford, and became a barrister at the Inner Temple in 1906. Recorder of Oxford, 1924-32, and for long counsel to the Jockey Club, he was made a judge in the king's bench division, 1932, and lord justice of appeal in 1944. Lawrence was president of the international tribunal during the Nuremberg trials (*q.v.*), 1945-46. He was given a peerage in 1947, and made lord of appeal in ordinary. He was chairman of a committee on police conditions, 1948-49.

**Oakum** (*A. S. acumbe*, off-combings). Loose hempen fibre made

from old ropes, used for caulking seams and stopping leaks on ships, and as an emergency surgical dressing. Tarred ships' ropes make the best oakum. Picking oakum was formerly a common employment in prisons and workhouses. White oakum is made from untarred ropes. Tow, the inferior parts of the flax fibre which separates out during the process of hackling, was formerly known as oakum.

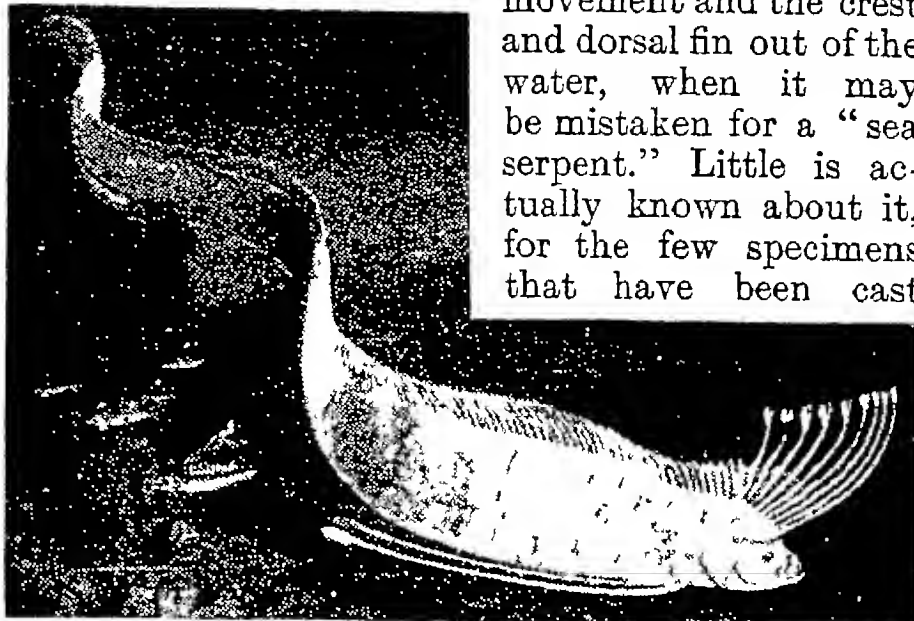
#### **Oamaru.**

Town and port of South Island, New Zealand. Situated 152 m. S.W. of Christchurch, and 78 m. N. of Dunedin by rly.,

it exports wool and grain. The centre of a rich agricultural district, it has freezing works and woollen mills. Its limestone is a useful building stone. Pop. 7,476.

**Oar.** Implement for moving a boat. It consists of a long, slender piece of wood, with a handle at one end and a blade at the other, the blade acting as a lever when in contact with the water. Each oar rests in an oarlock or rowlock. In early times galleys were propelled

The name was suggested by the long, slender ventral fins expanded at their extremity. North Sea fishermen know the fish as King of the Herrings. On the rare occasions when it comes to the surface it swims with an undulating movement and the crest and dorsal fin out of the water, when it may be mistaken for a "sea serpent." Little is actually known about it, for the few specimens that have been cast



Oar Fish. Specimen of the deep-sea fish called by North Sea fishermen King of the Herrings

ashore have broken up rapidly. Allied, some say identical, is the ribbonfish (*R. banksii*).

**Oarweed** (*Laminaria digitata*). Large olive seaweed of the Laminariaceae. It has a long, thick, round stem, with claw-like false roots, which attach it to the rocks. The thick, leathery, leafy portion, at first undivided, splits up into a number of segments. The whole plant is 15 ft. long, and grows on the rocks below ordinary low-tide



Oasis. Scene at the Oasis of Touggourt in the Sahara

by slaves sitting in rows. The implements used for propelling a light boat are called sculls; the sculler uses two of them, whereas the oarsman proper uses only one, another oarsman rowing on the other side of the boat. See Eight; Galley; Rowing; Sculling.

**Oar Fish** (*Regalecus glesne*). Remarkable deep-sea teleostean fish of the family Trachyteridae. It is found in the Atlantic, Mediterranean, and North Sea, off the Faroes, Scotland, Norway, and N.E. England. The compressed, elongated, and scaleless body may be as much as 20 ft. long, with soft bones, a small mouth without teeth, and a dorsal fin that extends from behind the head to the imperfect tail. The first few rays of this fin are very long, with dilated tips, forming a conspicuous crest.

level. Tangle and sea-girdles are popular names for this alga.

**Oasis.** Fertile tract in a desert. The fertility of oases is due to water near the surface, either in depressions, so that the sinking of wells will give permanent supplies of water, or along the course of wadies, or, as with the Nile, along the banks of permanent waterways passing through deserts. By cultivation they can be made to produce a wide range of crops. The date palm groves of Saharan oases are famous. See Desert.

**Oast House.** Kiln in which hops or malt are dried. They are seen especially in Kent. See illus. p. 6164; see also Hops.

**Oates, LAWRENCE EDWARD GRACE** (1880-1912). British explorer, born on March 17, 1880. He was gazetted to the Inniskilling





Oast House. Three oast houses, or kilns near Sittingbourne, Kent. See page 6163

Dragoons, and served in the S. African War and in India and Egypt. He joined the Antarctic Expedition in 1910, and was one of the sledge-party who accompanied Scott



L. E. G. Oates, British explorer

in his final dash for the South Pole. On returning the party was storm-bound and on his birthday, March 17, 1912. Capt. Oates, crippled by frost-bite, went out alone into the blizzard to die rather than be a burden to his starving comrades. See Antarctic Exploration. Consult A Very Gallant Gentleman, L. C. Bernacchi, 1933.

**Oates, Titus** (1649 - 1705). British conspirator and perjurer. He was born at Oakham, the son of an Anabaptist minister. Although expelled from Merchant Taylors' and sent down from Cambridge without taking a degree, he received ordination, but shortly afterwards was imprisoned for perjury. In 1677 he joined the R.C. Church, and went to the English Jesuit college at Valladolid, whence he was expelled, as also from St. Omer.

In 1678, Oates was in London concocting details of an R.C. "plot" to kill the king, invade Ireland, and indulge in a general massacre of Protestants. He duly revealed it to Sir Edmund Godfrey, a justice of the peace, who was found dead shortly after. For a time Oates was a popular idol.



Titus Oates, British conspirator After R. White

Nearly three dozen people were executed through his machinations. At last, in 1684, he was arrested for calling the duke of York a traitor, and after the duke's accession as James II, was tried, and sentenced to a heavy fine, whipping, and imprisonment for life, and annual exposure in the pillory. After William III came to the throne, Oates was released, and enjoyed a pension. He died July 12, 1705. Consult Liars and Fakery, P. W. Sergeant, 1926.

**Oates Land.** That part of South Victoria Land, Antarctica, lying between King George V Land (q.v.) and Cape Adare in lat. 70° S. and long. 160° E. See Antarctic Exploration.

**Oath.** In law, an appeal to God to witness the truth of evidence given. In English courts a witness must take an oath before giving evidence unless he has no religious belief or the taking of an oath is contrary to his belief, in which cases he may affirm. (See Affirmation.) A Christian takes the New Testament and a Jew the Old Testament in his uplifted hand and swears by Almighty God to speak the truth, the whole truth, and nothing but the truth. Until 1909 the English form required a "corporal" oath, i.e. the touching of some object, which had for long come to mean kissing the testament. This was strongly opposed by the medical profession on health grounds, and they took advantage of a provision introduced in 1888 and primarily intended for Scottish witnesses in England by which any person could insist on the Scottish form of oath which does not involve kissing the book. Any extension of this was at first bitterly opposed by the courts, but finally its legality was admitted. A witness may still if he wishes use the Scottish form. A witness who is neither Christian nor Jew may take an oath in any form binding on his conscience; thus a Mahomedan may swear upon the Koran.

There are extra-judicial oaths, the principal of which is the oath of allegiance, taken by M.P.s, ministers of the crown, clergymen, aliens on naturalisation, and others. See also Coronation Oath.

**Oatlands.** Estate near Weybridge, Surrey, England. Here Henry VIII built a magnificent palace, surrounded by a large hunting park. After the time of Charles I it fell into decay. The estate came later to the earl of Lincoln, who, about 1720, built another house in the park, on a different site. This was sold in

1794 to the duke of York, son of George III, who rebuilt the house, which had been damaged by fire in 1793. In 1857 the house became an hotel. The grounds contain a remarkable grotto, and a cemetery wherein the duchess of York buried her domestic pets.

**Oats.** Cultivated cereal. Varieties used in Great Britain belong mainly to the species *Avena sativa*.



Oats. Heads of *Avena sativa*

the origin of which is a matter of speculation. In Wales and in some of the Western Isles, varieties of *A. strigosa* are grown in regions of high rainfall and low fertility. Oats require a much cooler and wetter climate than barley and wheat, and so are extensively grown in N. and N.W. England and in Scotland, Wales, and N. Ireland. Oats prefer a less alkaline soil than barley, and too much lime in the soil is harmful to them. The greater portion of the British oat crop is spring-sown, but the use of autumn-sown varieties is increasing, especially in the E. and S.E. Cultivation of oats is similar to that of other cereals, but as they suffer more severely from spring drought and insect pests, early sowing is still more imperative.

Oats may be sown at almost any position in the crop rotation, but preferably on soils that are not too rich. As they need abundant moisture in early stages, any condition which leads to a check in growth in the spring should be avoided. Artificial fertilisers may be applied in a mixture immediately before sowing, at the rate of 1 cwt. sulphate of ammonia or 1 cwt. nitrate of lime, 3 cwt.

superphosphate, and 3 cwt. kainit per acre. Yield of grain varies greatly with the district, but averages 40-60 bushels (15-22 cwt.) per acre, with about 25-30 cwt. straw. As oats are not taken to the same degree of ripeness as barley or wheat, this straw usually contains valuable nutriment for stock feeding.

In composition the true kernel of oats, *i.e.* the grain separated from the husk, is as rich in protein as wheat, but contains three to four times as much oil; this in conjunction with about 60 p.c. carbohydrates makes the oat grain a well balanced and safe food for livestock. Its feeding value is modified by the composition of the husk, which contains a high proportion, sometimes one-third by weight, of indigestible fibre. The proportion of husk to kernel varies, the best oats containing 20-23 p.c. husk, while inferior sorts often have over 30 p.c. Oats are used by human beings as oatmeal and as flaked oats.

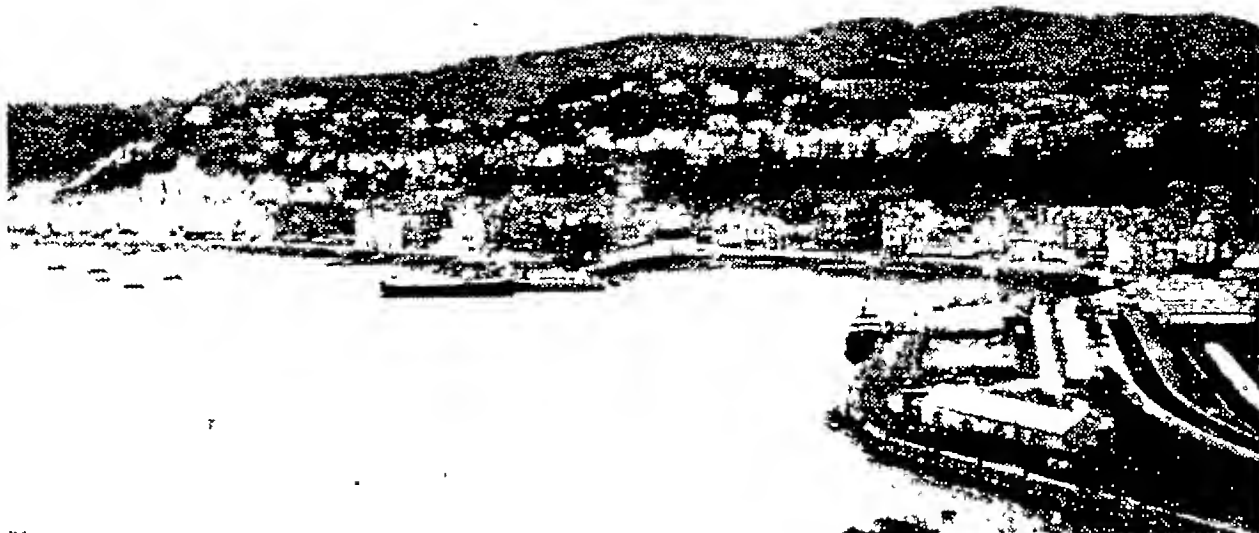
**Oaxaca.** Maritime state of S. Mexico, bounded S. by the Pacific Ocean. Much of it is covered by the wooded spurs of the Sierra Madre. There are numerous small streams. Sugar, coffee, cotton, tobacco, and cocoa are cultivated, and cattle rearing is carried on. A rly. extends from the N. to the capital, Oaxaca; a second line in the E. crosses the isthmus of Tehuantepec to Puerto Mexico on the Gulf of Campeche. There is a fine highway from the capital to Matamoros. Area, 36,371 sq. m. Pop. (1950) 1,421,313.

**Oaxaca.** Capital of the state of Oaxaca, Mexico, in the S. of the country. Near by at Monte Albán and Mitla are notable remains of the ancient Zapotec and Mixtec civilizations, and material in the city museum includes beautiful Mixtec gold jewelry from a tomb at Monte Albán. It was an important town and centre of communications from the Conquest, and cochineal was once a great source of wealth; black earthenware, tooled leather, and mescal are produced. The 17th-century cathedral and other churches are notable for their Baroque stonework. Pop. (1950) 46,632.

**Ob** or **OBI.** River of Asiatic Russia. It is formed by the union of the Biya and Katunya, in Altai territory. It joins the Irtysh below Samarovsk and discharges into the gulf of Ob, an arm of the Kara Sea. The river is 2,100 m. long.

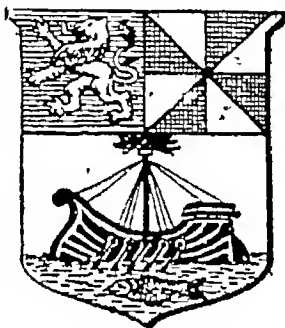
Construction of a huge dam at Belogorie, 120 m. N. of Tobolsk,

was undertaken in 1949 as part of a big scheme to reverse the flow of the Ob and the Yenisei in order to provide irrigation for southern Siberian desert lands.



Oban, Scotland. The town and harbour of this Argyllshire seaport

**Oban.** Burgh, seaport, and holiday resort of Argyllshire, Scotland. It is 62 m. directly N.W. of Glasgow, but much farther by rly. and road. The rly., opened in 1880, runs through beautiful country. A great tourist centre for the western Highlands, Oban has a splendid harbour, protected by the island of Kerrera. Near by are the ruins of Dunollie and Dunstaffnage castles; and prehistoric cave-dwellings. Oban was made a burgh in 1833. Market day, Wed. Pop. (1951) 6,226.



Oban arms

**Obbligato** (Ital). Instrumental accompaniment to a vocal or solo line in a musical composition. This is written out by the composer or arranger instead of being left to the discretion of the performer. Favourite examples have been scored for flute or cello in songs, while there is a harp obbligato to the bass aria Quoniam in Bach's Mass in B minor.

**Obeah** or **OBI.** A form of Negro witchcraft practised in some W. Indian islands and the southern United States. The obeah-man or obeah-woman uses incantations, charms such as bottles containing feathers, pebbles, plants, and rags, sometimes poison.

**Obelisk** (Gr., spit, for roasting). Tapering stone shaft tipped with a pyramidion. In ancient Egypt, where

it was a symbol of the sun-god Ra, it was usually a four-sided monolith of pink granite with a base-width one-tenth of its height, and a copper-sheathed pyramidal

apex, and bore incised hieroglyphs upon each face. Obelisks stood in pairs before temple portals. In the Vth dynasty short obelisks stood as cult objects in the centre of royal funerary temples. The earliest elongated example is that of Senusert I (XIIth dynasty) at Heliopolis. One of Hatshepsut's at Karnak stands in its original position. The tallest obelisk so far discovered is 105½ ft. high; it is in Rome; Paris has one of Rameses II from Luxor. *See* Cleopatra's Needles.

**Oberammergau.** Alpine village in Upper Bavaria, Germany. In the Ammer valley, 45 m. by rly. S.S.W. of Munich, it is 2,800 ft. high. It is world-famous for its Passion Play (*q.v.*), held since 1634, at roughly ten-year intervals, in fulfilment of a vow made by the inhabitants of the village during a plague.

The Passion Play (revived 1950 after a lapse of sixteen years) was cancelled during the First Great War, and during the Nazi period, after which some of the



Oberammergau, Bavaria. Stage and crucifixion scene of the Passion Play



actors had to undergo denazification trials. Previously playing in front of the fine rococo church (1736-42), the actors, in ordinary life farmers and wood-carvers, secured in 1830 a large open-air scene seating 5,000 spectators under cover. A 40-ft. sandstone Crucifixion group, gift of Louis II in 1871, and the neighbouring Benedictine monastery of Ettal, are other attractions of the place, which lies in a region of winter sports. Pop. 2,341.

**Oberhausen.** Industrial town of Germany. It is situated near the N. bank of the Rhine, 44 m. by rly. N. of Cologne, and, although founded only in 1845 and with urban rights since 1875, it was a highly important industrial centre, with some of the greatest iron and steel works of the Ruhr area. Almost linked with Essen in the E., and Duisburg in the W., it was at the heart of the heavy industry of the Ruhr, and as such, was almost wiped out by the bombing attacks of the Second Great War. By the end of 1955 its est. pop. was 239,100.

**Oberlin, JEAN FRÉDÉRIC** (1740-1826). Alsatian pastor and philanthropist. Born Aug. 31, 1740, at Strasbourg, he studied at the university, and in 1767 became pastor of Waldbach, on the borders of Alsace-Lorraine. Here he built school-houses, introduced improved methods of agriculture, laboured devotedly to improve the well-being of the people, and preached a mystical piety. Awarded the medal of the legion of honour, 1819, he died June 1, 1826.



J. F. Oberlin,  
Alsatian pastor

**Oberon** (Fr. *Auberon*, Ger. *Alberich*, ruler of the elves). King of the fairies. He appears as king in the Charlemagne romance of Huon of Bordeaux, and as the dwarf, Alberich, of the Nibelungenlied, long before he was anglicised by Shakespeare in *A Midsummer Night's Dream* (q.v.).

**Oberon.** One of the four satellites of the planet Uranus. Discovered by Herschel in 1787, it is fourth in order of distance from the planet. It is probably about 600 m. in diameter and revolves in its orbit, which is 729,000 m. across, in just over 13 days 11 hours. Like other satellites, its orbital plane is remarkable in being inclined at 82° to the ecliptic.

**Oberon, MERLE** (b. 1911). British film actress. Estelle Merle O'Brien Thompson was born Feb. 19, 1911, in Tasmania, and educated at Bombay and Calcutta. After appearing in cabaret at the Café de Paris, London, she met Alexander Korda (to whom she was married, 1939-45) and was in his first film, *Wedding Rehearsal*, 1933, then played Anne Boleyn in *The Private Life of Henry VIII*. An exotic appearance gave her distinction in many films, e.g. *The Scarlet Pimpernel*, 1935; *The Dark Angel*, 1936; *Wuthering Heights*, 1939; *Forever and a Day*, 1943; *Temptation*, 1947.



Merle Oberon,  
British actress

**Obesity.** Excessive deposit of fat in the body. Corpulence, or general overgrowth of fat in the body, results from some disorder of nutrition, probably due to excessive absorption of the fat-producing constituents of food, to incomplete combustion of fat in the tissues, or to retention of fluid in the tissues. Some persons remain thin in spite of being large eaters, and others put on weight though they take food sparingly. Heredity is a marked factor. Excessive obesity leads to shortness of breath, interference with the action of the heart, and difficulty in walking. Corpulent persons should avoid taking too much food, and particularly should reduce those articles of diet which contain much starch or sugar. Several diets and treatments have been advocated for lessening obesity. See Diet.

**Obey, ANDRÉ** (b. 1892). French writer. Born at Douai, May 8, 1892, he was educated there and at Lille university, and after serving in the First Great War lived in Paris, where he became a critic. A novel, *Le Joueur de Triangle*, 1928, was awarded the Théophraste Renaudot prize. Obey founded his reputation as a dramatist with *Noé*, 1931 (produced, as *Noah*, at the New Theatre, London, 1935), and *Le Viol de Lucrèce*, 1931. Other plays included *La Bataille de la Marne*, 1932 (Brieux prize); an adaptation of Shakespeare's *Richard III*, 1933; *Loire*, 1933; *Don Juan*, 1936.

**Obiter Dictum** (Lat., said by the way). Legal phrase denoting an opinion expressed incidentally by a judge in the course of his judgement, which is not an in-

tegral part of the judgement, i.e. is not necessary for the decision of the case. Though it may be valuable, owing to the learning of the judge who pronounces it, a dictum which is merely obiter is not binding in any other court of the same or inferior jurisdiction. See also Birrell, Augustine.

**Object.** In grammar, a word, phrase, or clause used substantively in immediate dependence on a verb, as denoting that on or toward which its action is directed. As an example, in the sentence "I killed him," him is the object of the verb killed. In optics the object glass is the lens or system of lenses, also known as the objective, placed at the end of a telescope or microscope nearest the object being examined. In philosophy, object is the antithesis of subject, and denotes the totality of external phenomena observed by the individual.

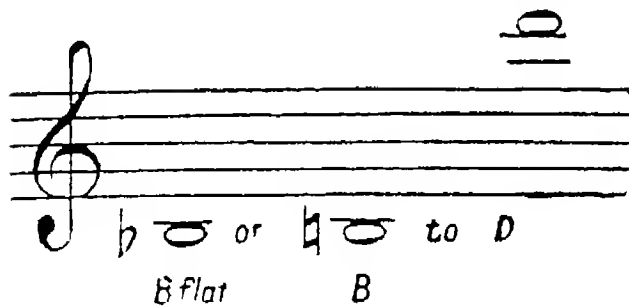
In military phraseology, an object is any prominent feature of landscape which can be used as an aiming point, or as zero point in compiling a visual range card for field artillery. In this sense, object is distinct from objective, which describes any position the capture of which is the aim of a military operation.

Object teaching is a method of instruction in which illustrative objects are employed, e.g. as in a kindergarten. The object ball in billiards, pyramids, etc., is the ball which is designed to be hit by the cue ball, i.e. the ball which is being directly aimed at. In medicine, object blindness is a condition in which objects may be seen distinctly, but are of no significance to the mind. In astronomy, object metal is the principal mirror of a reflecting telescope.

**Oblates** (Lat. *oblatus*, offered, part. of *offerre*, to offer). Word used in various monastic senses. Originally oblates were children brought to the monastery by their parents and dedicated to the religious life. Later they were lay brothers. Still later, they were associate members, sometimes known as confratres or tertiaries, who observed a simple rule of life, and devoted themselves and their fortunes to the service of the community. Henry VI of England was a confrater of the abbey of S. Edmundsbury. In the R.C. Church, the title oblates has been assumed by congregations of priests devoted to preaching, conducting missions, and education, and the female congregations devoted to high school teaching.

**Obligation.** Term used in English law. It describes any act or instrument whereby a person, called in England the obligor, is bound by law to do or refrain from doing something.

**Oboe** (Fr. *hautbois*, high-wood; Ital. *oboe*; Old Eng. *hoboy*). Woodwind instrument consisting of a conical tube, with side holes, as in the clarinet and flute. It is played vertically with a double reed, and it first "overblows" at the octave. The useful compass of the ordinary treble oboe is



Oboe.  
Military form

and good players command a few semitones higher. The tone of the oboe is reedy, with a peculiar nasal ring, very pleasant at its best, harsh when forced. The oboes were among the earliest of wind instruments to secure permanent places in the stringed orchestra, and in the Handel period (1685-1759) they were used in masses. The contemporary orchestra includes two or three, playing independent parts.

An alto oboe, a minor third lower in pitch, is called *oboe d'amore*; a tenor instrument, a fifth lower is the *cor anglais*. Bach used the *oboe d'amore* a good deal, and also a tenor *oboe di caccia* of the same pitch as the *cor anglais*; but some authorities consider the *oboe di caccia* to have been a high-pitched bassoon.

**Obolensky, ALEXANDER, PRINCE** (d. 1940). Russian-born English footballer. From Trent College he went to Brasenose College, Oxford, and made his mark as a Rugby wing three-quarter. Naturalised in 1936, he became an English international player of exceptional speed and skill. He entered the R.A.F. and was killed, aged 24, on March 29, 1940, when his machine crashed in East Anglia.

**Obolus.** Ancient Greek coin of silver alloyed with copper. Traditionally placed in the mouth of a Greek corpse, it was Charon's fare for rowing the soul of the departed across the Styx.

**Obregon, ALVARO** (1880-1928). President of Mexico. Born in Sonora, he became the leader of a troop which helped to suppress Orozco's rebellion. In 1913, in command of the Constitutionalist army, he entered Mexico City, Aug. 15, 1914. The most powerful man in the country, he was elected president without opposition, 1920-1924. Obregon was re-elected 1928, but before he could assume office he was murdered, July 17.

**Obrenovitch.** Former ruling dynasty of Serbia. Its founder was Milosh Obrenovitch (1780-1860), elected prince of Serbia in 1817. The Obrenovitch rule saw the emergence of Serbia as a kingdom independent of Turkish domination. For nearly a century there was rivalry between the dynasty and that of Karageorgevitch, and the last Obrenovitch to occupy the throne, Alexander I (1876-1903), was assassinated with his queen, June 11, 1903.

**O'Brien, WILLIAM** (1852-1928). Irish journalist and politician. Born Oct. 2, 1852, he became a reporter for the Cork Daily Herald. In 1880 he founded United Ireland, a paper of advanced Nationalist views. Indefatigable in working for the Irish cause, he was nine times



William O'Brien,  
Irish journalist  
Mills

prosecuted for political offences and spent over two years in prison. Nationalist M.P., 1883-95, and member of the land conference of 1903, he advocated a policy of conciliation and toleration, founding the All-for-Ireland league. M.P. for Cork city from 1910, he withdrew from parliament at the general election in 1918. He died Feb. 25, 1928.

**O'Brien, WILLIAM SMITH** (1803-64). Irish politician. Born Oct. 17, 1803, son of a landowner in Clare, and educated at Harrow and Cambridge, he became M.P. for Ennis in 1828, and represented Limerick, 1835-48. In 1843 he joined O'Connell's association for the repeal of the Union, but seceded in 1846 and founded the Irish Confederation, with a more violent policy. When the Habeas

Corpus Act was suspended in Ireland in 1848, O'Brien attempted an armed rising which failed. He was sentenced to death, but the penalty was commuted to transportation to Tasmania. His health giving way, he was released in 1854. He died June 18, 1864.



**Obscenity.** In English law, conduct or publications tending to corrupt or deprave public morals. Such conduct or publication is an offence. Anybody publicly exhibiting obscene books or drawings is liable to a fine of 40s. or 14 days in prison. By the Indecent Advertisement Act, 1889, it is an offence, punishable by a fine of 40s. or a month's imprisonment, to exhibit, or affix, or offer to any member of the public in a public place any obscene picture or printed or written matter. An obscene libel is indictable at common law. To send through the post a package bearing on the outside obscene words, designs, etc., is an offence under the Post Office Act, 1908, and is punishable by a fine not exceeding £10, or imprisonment with or without hard labour not exceeding 12 months.

**Obscurantist.** Term applied derisively at the revival of learning to the clerical opponents of learning and education. It appears to have gained currency through the publication in 1515 by Ulrich von Hutten's circle of the *Epistolae obscurorum virorum*, a satire on certain monks of Cologne who wished to destroy all Rabbinical literature. Obscurantism is a term often applied by their opponents to the supporters of traditional beliefs in theology and politics, especially to those who desire the suppression of what they consider subversive teaching, such as modernism, republicanism, free thought, etc.

**Observation.** The discriminate and retentive mental registration of things and happenings in the outer world. The faculty of accurate observation is a preliminary condition of science, and is of incalculable value in life. When the faculty of observation is highly developed, there are three elements or components which may be distinguished, though they are in reality inextricably intertwined.

(a) There is sensory acuteness—an eye to see. Many children have an almost photographically precise



observational power, which is partly an inborn gift, like a musical ear, but is also an expression of wide interests and inquisitiveness, and of a mind whose receptivity has not been dulled by the trivial, or overloaded with a plethora of pictures. Even when there is no special gift of observing, the average capacity is usually there, and both educational experiment and everyday experience show that this can be greatly developed. Early practice in recognizing flowers and birds, or analysing the jetsam of the shore and the stones by the wayside, educates the power of precise seeing.

(b) Inseparable from sensory acuteness is the power of clear-cut perception, *i.e.* of building-up lucid mental pictures of what is seen. This implies discrimination, knowing what one is looking at, the introduction of a more definite intellectual element into the sensory photograph. As a matter of fact, perceptions continually blend with our sensations. In perception we see the different parts of a thing making up a related whole, and we see this whole in relation to other parts of the picture. The very beginning of a knowledge of the outer world is a process of selecting from our thought-stream certain groups of vivid sense-impressions, and if we are to go on to know, the process of selecting must continue.

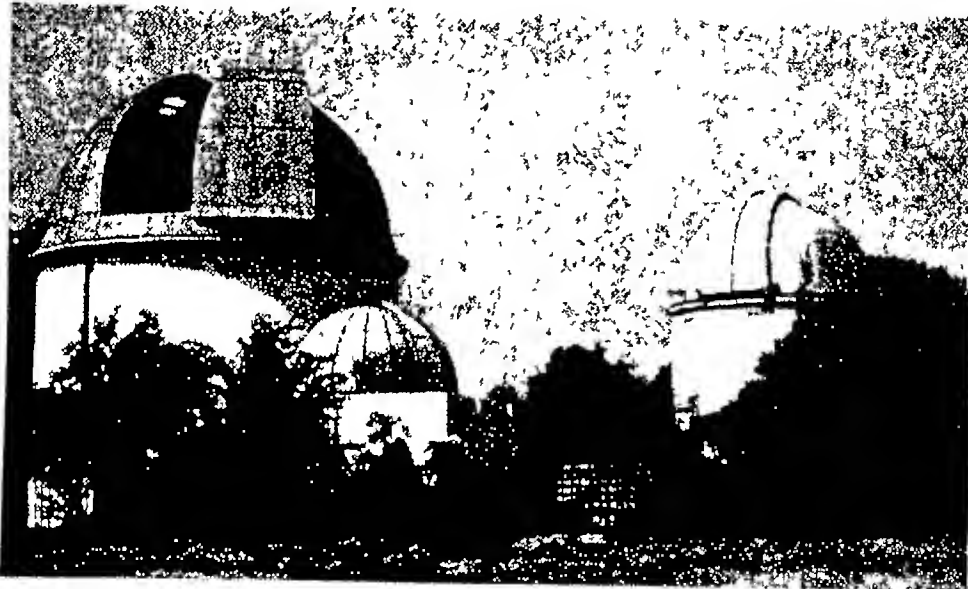
(c) There is a third element in observation of a still higher order, namely, conceptual. The mind sees what it brings with it, the power of seeing. Those who have thought over things, who have, as we say, ideas about them, who have what we may call preconceptions, are likely to see more than the thoughtless and the ignorant—provided always that they keep an open mind as well as an open eye, and do not allow prejudice or desire to influence their vision. The botanist who knows the flora of a countryside is likely to see much more than the casual observer; his store of concepts exerts an influence on his perceptual facility.

In the mind of the scientific observer, even when precision becomes habitual, there is always caution; he is more aware than others of the possibilities of error; he has learned how easy it is to see what one wishes to see. He has ever before him the test of scientific knowledge, that it must be verifiable by competent observers in similar circumstances.

**Observation Post.** Military term denoting a position from which it is possible to direct, and to

observe the effect of, artillery fire. In modern warfare the guns frequently fire from positions from which the target is invisible. An observation post from which the target can be seen must then be established well in front of the gun line. The artillery commander is usually the observing officer and passes back his orders to the gun position officer by means of radio or telephone. With very long-range artillery, the observation post may be in an aircraft flying near the target. Artillery is directed in this way only when the target is fixed or slow moving; an observation post is seldom necessary for anti-tank artillery, for this type of weapon is usually sited and fired individually. In anti-aircraft artillery, the predictor, an automatic ranging device, performs the functions of an observation post. (*See Artillery.*) The term observation post is also applied to the sighting positions manned by the Royal Observer Corps.

**Observatory.** Building constructed and used for the purpose of making astronomical, meteorological, or other kindred scientific



Observatory. The University of London observatory at Mill Hill, Middlesex

observations. Astronomical observatories were founded in China very early, and one was built at Alexandria about 200 B.C.

The most important parts of an astronomical observatory are the cupolas or domes which house the telescopes. Sliding shutters are so arranged that the telescopes can be pointed from the horizon to the zenith, while by the rotation of the whole dome on rollers it is possible to observe any point in the heavens. Where the telescopes are of great size the floors of the domes are made to rise by hydraulic power, to enable the observer to accommodate himself to the changing height of the instrument. A separate building contains the transit instrument, which, together with a sidereal clock, forms an

indispensable part of the equipment of an observatory. The transit instrument is mounted to point N. and S., so that it can move only up and down, and it is used for observing the time a star crosses the meridian of the instrument. This observation gives the means of checking the sidereal clock, since the time the star should be on the meridian is known from other considerations.

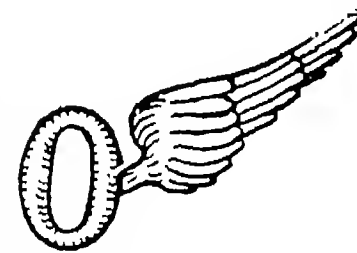
The Royal Observatory was founded at Greenwich in 1675 and transferred to Herstmonceux Castle, Sussex, in 1948. At Edinburgh and Cape Town also there are royal observatories. Other national observatories are in Paris, Pulkovo (near Leningrad), Madrid, Tokyo, and Washington. They provide a time service and the observations for a nautical almanac for their respective countries, and engage in long-term astronomical research. Oxford, Cambridge, and other universities have observatories for post-graduate work. Another type is exemplified by the institutions at Lick, Mount Wilson, and Mount Palomar, Calif., the Lowell observatory, Ariz., and the David

Dunlap observatory at Toronto. Large telescopes are maintained in the S. hemisphere at Arequipa, Peru; Bloemfontein and Pretoria, S. Africa; and Canberra, Australia. These were set up because parts of the sky are not visible from older observatories in the N. *See Astronomy;*

*Meteorology; Telescope.*

A. Hunter, Ph.D., F.R.A.S

**Observer.** Term formerly used in the R.A.F. to designate any member of an air crew other than the pilot or gunner. Observers were trained at the airobservers' school in map reading, the use of navigational instruments, bombing, artillery direction, and reconnaissance. During the Second Great War the increasing complication of duties led to the trade being abolished, and the observer's functions were divided between two men designated navigator and signaller. The navigator's badge



Observer. Badge worn on left breast

consists of a half wing attached to a laurel circle enclosing the letter N; the signaller's badge is similar except that the letter is S. Either is worn on the left breast.

**Observer, THE.** Oldest Sunday newspaper in London, founded in 1791 by W. S. Bourne. Acquired early in the 19th century by William Clement, it was controlled by the Clement family until 1870 when it was purchased by Julius Beer (whose wife owned the Sunday Times). In 1905 Northcliffe purchased the Observer which in 1911 was bought by William Waldorf Astor (afterwards 1st Viscount Astor). In 1945 it was vested in a trust by its then owner, the 2nd Viscount Astor. J. L. Garvin, editor 1908-42, enhanced the paper's political standing, and gave distinction to its dramatic, literary, and music criticism. Ivor Brown (*q.v.*), editor during 1942-48, was succeeded by David Astor, a youngson of the 2nd Viscount Astor. In 1956 the circulation of the Observer was more than 633,000.

**Observer Corps, ROYAL.** Civilian corps formed in 1925 to track and report movements of enemy aircraft flying over Great Britain. The corps is not part of the R.A.F., but during war it comes under R.A.F. control and forms part of the A.A. defence. Personnel are recruited on a part-time basis from the district in which their posts are situated. On mobilisation a certain number of observers are employed on a full-time paid basis, and the part-time members perform 24 hours' duty weekly. Observers are trained in recognition, plotting, and height-finding. The commandant is responsible to the C.-in.-C., Fighter Command, for operational work, and to the Air ministry for administration and equipment. Officers wear a uniform of R.A.F. blue with black braid on the cuff and distinctive cap-badge; other ranks wear blue battle dress with the corps badge on the left breast.

The corps took up its duties 10 days before the outbreak of the Second Great War, and quickly proved a vital factor in Great Britain's A.A. defence. For outstanding work in the battle of Britain it was given the designation Royal. It guided back to their base R.A.F. bombers crippled in operations over enemy territory, and played a vital part in the defeat of the flying bomb.

Many women were enrolled in the corps, which eventually exceeded 50,000. After the end

of the war in Europe the corps was disbanded, but on Jan. 1, 1947, it was re-formed on a peace-time basis; a nucleus of permanent officers was established and 28,500 spare-time volunteers were enrolled.

**Obsession** (Lat. *sedeo*, tarry). Fixed idea, usually of a worrying or distressing character. Certain types of personality are prone to dwell to an exaggerated degree on a specific problem, *e.g.* a fear or an annoyance or a responsibility. They are unable to put the subject out of their minds and constantly worry about it even although they may realize that they are being unreasonable.

Obsessions are often related to fear of dirt or some form of illness or accident, to some apprehended disaster such as loss of work or poverty, to a fancied slight or insult, or to some action or thought about which the individual feels guilty or ashamed. An obsession may be so disturbing that psychiatric treatment is desirable.

**Obsidian.** Name given to an acid lava akin to rhyolite. The rock is glassy from rapid cooling and is extremely hard and brittle. Usually black or dark grey, it may be occasionally brown or green. It is found in many volcanic regions, and because of its hardness and ability to take a high polish, it was used by primitive man for making his arrow and spear heads, also for knives, ornaments, and mirrors.

**Obstetrics** (Lat. *obstetrix*, midwife). Art of helping women in pregnancy and childbirth. In the human species the duration of normal labour with a first child is usually from 20 to 24 hours, but after the first delivery the process is easier, and does not usually last more than about 12 hours.

As soon as the child is born, its eyes should be wiped clean with a little cotton wool soaked in a silver or penicillin solution to combat infection possibly acquired in the vagina. The cord which still connects the child with the placenta should be ligatured and divided after pulsation has ceased. The child usually breathes or cries freely; if not, steps should be taken to promote respiration by holding at the heels and slapping. The period following the birth of the child is known as the puerperium, during which the mother's diet should be light and nourishing. She should remain in bed several days. The child should be put to the breast within 12 hours after delivery.

**O'Casey, SEAN** (b. 1884). An Irish dramatist. Shaun O'Cathasaigh was born of working-



Sean O'Casey,  
Irish dramatist

class parents in Dublin, March 31, 1884, and at 14 worked as a builder's labourer, later on the railway. The first play he wrote was *The Shadow of a Gunman*, 1922 (produced at the Court Theatre, London, 1927); most famous were *Juno and the Paycock* (Royalty Theatre, 1925, and Hawthornden prize, 1926), and *The Plough and the Stars*, 1926. These masterpieces gave vivid pictures of Dublin life during "the troubles." In *The Silver Tassie*, 1929, and *Within the Gates*, 1933, he turned to expressionism, but with *Red Roses for Me*, 1942, he was back in the Dublin slums.

He published an autobiography in six volumes: *I Knock at the Door*, 1939; *Pictures in the Hallway*, 1942; *Drums under the Window*, 1945; *Inishfallen Fare Thee Well*, 1949; *Rose and Crown*, 1952; *Sunset and Evening Star*, 1954.

**Occasional Conformity.** Usage for avoiding the penalties and disabilities of the Test and Corporation Acts. These two Acts forbade anyone to hold any public office unless he took the sacrament according to C. of E. rites. Many nonconformist office holders did this now and again. Attempts in Anne's reign to stop this practice were successful when in 1711 the Occasional Conformity Act made it illegal. In 1718 the Act was repealed and the practice renewed. From 1727 to 1829 it was made unnecessary by an annual Act of Indemnity. See *Toleration*.

**Occasionalism.** System of philosophy founded by Arnold Geulinx (1624-69), professor of philosophy at the universities of Louvain and Leyden successively. It denies any reciprocal action of body and soul, comparing them to two watches, which, although separate and independent, are in agreement. God is the inter-mediator. On the occasion of a bodily process, a definite association arises in the soul, and on the occasion of an idea in the soul, the body moves—as the result of divine agency.

**Occiput.** Back of the human head, the occipital bone forming



nected by steamship services. It has important pulp and paper works. Pop. 2,700.

**Oceania.** Collective name for the groups of islands in the South Seas, or South and Central Pacific Ocean.

Physically, Oceania includes five groups of islands: (1) the Australasian Festoon stretches from New Guinea to Macquarie Island, and includes the Papuan Islands, New Caledonia, and New Guinea; the natural features of this group are cognate with those of Australia; the Loyalty Islands are coralline, the Solomons volcanic. (2) The Micronesian Festoon extends from the Caroline Islands to the Friendly Islands and includes Fiji and Samoa; the islands rest on the outskirts of a submarine platform connected with Australia. (3) The Pelew-Ladron Festoon includes the Volcano Islands and forms a link along the E. of the China Sea between Japan and the East Indies; it belongs to Asia. (4) The Central Pacific Chain rests on an isolated submarine platform, and includes Hawaii and the Ocean Islands. (5) The S. Pacific Chain includes Easter Island on the E., the Society, Cook, and Phoenix Islands, and Fanning Island.

The islands of Oceania are also loosely grouped in relation to their inhabitants into Melanesia, Micronesia, and Polynesia (*q.v.*); this grouping ignores New Guinea, New Zealand, and New Caledonia, as well as the relation of the islands to the relief of the floor of the Pacific. Politically, Oceania is divided among Great Britain, France, the U.S.A., and Chile.

British Oceania includes the crown colony of Fiji, islands administered by the high commissioner for the Western Pacific; Cook and other islands annexed to New Zealand, including Auckland and Chatham Islands; Norfolk Island, which is Australian; as well as the former German islands now administered under mandate by Australia, New Zealand, or Great Britain.

French Oceania, total area 1,520 sq. m. and est. pop. 62,700, comprises Tahiti, and the rest of the Society Islands, The Marquesas, Low Archipelago, the Leeward Islands, and the Gambier group. The New Hebrides are jointly British and French. Hawaii is the chief U.S. group in Oceania; Guam, Tutuila, and other Samoan islets also are American. Easter Island belongs to Chile. Between the Great Wars Japan administered the former German islands north of the

equator, the Pelews, Ladrone, Carolines, and Marshalls.

**Ocean Island.** Island in the Pacific Ocean. Situated just S. of the equator,  $0^{\circ} 52' S.$ ,  $169^{\circ} 35' E.$ , it is 6 m. in circumference. First occupied by Great Britain in 1901, it was annexed to the Gilbert and Ellice Islands colony in 1916 and became headquarters of the administration of the W. Pacific. The island is rich in high-grade phosphates; the right to work them was purchased by the British phosphates commissioners in 1921. Normally the island has a pop. of some 2,500. In the Second Great War it was occupied by the Japanese, who deported the population, but surrendered to an Australian landing party in Oct., 1945.

**Oceanography.** This subject is fully treated under Ocean (*q.v.*).

**Oceanus.** In Greek mythology, the god of the ocean, the father of all things. The name was also given to the river supposed to encircle the whole earth, which was regarded as being flat. At a later date, the term Oceanus was applied generally to the greater seas outside the Mediterranean.

**Ocelot** (*Felis pardalis*). Species



Ocelot. Specimen of the South American tiger-cat  
W. S. Berridge, F.Z.S.

of wild cat occurring in tropical America. It has tawny fur, beautifully marked, and is usually nearly 3 ft. long. It spends much of its time in the trees, where it preys upon birds and small mammals. In captivity it is morose and savage. Pron. Ô-sêlo.

**Ochil Hills.** Range of hills in Scotland, principally in Perthshire, but also occupying parts of the cos. of Stirling, Clackmannan, Kinross, and Fife. They trend 25 m. N.E. from Bridge of Allan to the Firth of Tay, and enclose many valleys and glens of great beauty. The principal summits are Ben Cleuch (2,363 ft.) and King's Seat (2,111 ft.). Coal and other minerals abound.

**Ochre.** Iron ore consisting essentially of iron oxide more or less hydrated and mixed with clay. The colour varies from yellow to red according to the degree of oxidation—ferrous oxide ( $FeO$ ) yellow, ferric oxide ( $Fe_2O_3$ ) red. The strength and purity of colour depend upon the proportion and

quality of the non-ferrous constituents. Deposits of this type occur in many parts of the world, but those of sufficiently pure colour and in quantity great enough for commercial development and use in the paint industry are comparatively few. France, South Africa, and India supply ochres of high quality. See Pigments.

**Ochrida, OKHRIDA, OR OHRID.** Lake and town of Yugoslavia. The lake lies in the S. of Serbia, high among the mts., on the Albanian frontier: 18 m. long by 8 m. in breadth, it has a depth of almost 1,000 ft., and is drained by the Black Drin. The ancient Via Egnatia connected the N. end of the lake with the Adriatic coast by the Skumbi valley. The town, situated on the N.E. shore of the lake, is the seat of a Greek Orthodox bishop. It is connected by the modern equivalent of the Via Egnatia with Monastir. After the evacuation of Monastir in 1915, the Serbians retreated through Ochrida, which was finally recovered by the Allies in Sept., 1918. Pop. est. 10,000.

**Ochs, ADOLPH SIMON** (1858-1935). American newspaper proprietor. Born at Cincinnati, March 12, 1858, he spent most of his early days in subsidiary newspaper posts at Knoxville, Tenn. In 1878 he became owner of The Chattanooga Times, in the same state, and in 1896 acquired The New York

Times (*q.v.*), the circulation of which had dropped to 9,000, and which was losing \$1,000 a day. By his skilful management he raised it to the highest position in the daily press of the U.S.A. From 1900 he was a director of the Associated Press. By a gift of \$500,000 he made possible the preparation and publication of the Dictionary of American Biography. He died while on a visit to Chattanooga, April 8, 1935.

**Ochterlony, SIR DAVID** (1758-1825). British soldier. Born at Boston, U.S.A., Feb. 12, 1758, he



Sir David Ochterlony,  
British soldier  
After Devis

entered the service of the E. India Co. in 1777. He won distinction by his defence of Delhi in 1804 and by his successful leadership during the war with the Gurkhas, when the ruler of

Nepal was forced to terms. As resident at Rajputana, his action in 1825 led to a rupture with the governor-general, Lord Amherst, and he resigned. He died almost at once at Meerut, July 15, 1825. He was made a baronet in 1816.

**Ockham** OR OCCAM, WILLIAM OF (d. 1349). English Franciscan monk and schoolman, known as the Invincible Doctor. He was born at Ockham, in Surrey, and died at Munich. His defence of Nominalism against Realism gained him the name of Prince of Nominalists. One of his chief merits is that he restored induction to its proper place as the handmaid of deduction.

**O'Connell, DANIEL CHARLES** (c.1745-1833). Irish soldier. Born in co. Kerry, he entered the French army in 1770. With the Irish brigade he served in the Seven Years' War, in Mauritius, and at the siege of Gibraltar, winning the title of count and the rank of colonel. In 1792 he took the side of the Bourbons, and, having sought refuge in London, he proposed to form an Irish brigade to serve against the republic. The scheme, however, failed. He returned to France after the peace of Amiens in 1802, and died there, July 9, 1833. The Liberator (*v.i.*) was his nephew.

**O'Connell, DANIEL** (1775-1847). Irish leader, known as the Liberator. Born near Cahirciveen, co.



Daniel O'Connell,  
Irish leader  
After T. Carrick

Kerry, Aug. 6, 1775, he was educated at the English Colleges at St. Omer and Douai, studied at Lincoln's Inn 1794-96, and was called to the Irish bar, 1798.

Starting in 1803 on his long struggle for Catholic emancipation, by 1808 he had become the virtual leader of the movement in Ireland. In 1815 he killed in a duel a Dublin tradesman named D'Esterre, and in 1820 a duel with Sir Robert Peel, arranged to take place in Ostend, was prevented by O'Connell's arrest and his being bound over in London.

In 1823 O'Connell founded the Catholic Association (*q.v.*), and in 1826 the Order of Liberator, which was to prevent secret societies, feuds, and riots, protect the rights of franchise holders, and generally unite Irishmen of all classes for the common good.

His election as M.P. for co. Clare, 1828, and his refusal to take

the oath, had their influence in the passage of the Catholic Relief Bill, 1829, and, re-elected unopposed, he took his seat in Feb., 1830. Before long he started his struggle for the repeal of the legislative union, and came to a working arrangement with the Whigs in 1835. The Repeal Association was founded in 1840, the powerful Nation newspaper in 1842, and in 1843 came monster meetings all over Ireland. A great gathering fixed for Clontarf was proclaimed, and O'Connell was arrested and tried for sedition. He was fined £2,000, and sentenced to one year's imprisonment, but the sentence was reversed by the house of lords, 1844. He supported Lord John Russell's ministry, 1846; but ill-health and increasing party dissensions in Ireland clouded his genius. He died at Genoa, May 15, 1847. See Catholic Emancipation; Ireland: History. Consult Lives, R. Dunlop, 1900; D. Gwynn, 1929.

**O'Connor, FEARGUS EDWARD** (1794-1855). Irish agitator and

Chartist. The son of Roger O'Connor, one of the United Irishmen, he was born July 18, 1794, educated at Trinity College, Dublin, and entered parliament in 1832 as M.P. for co. Cork. In 1835

he was unseated on petition, and transferred his activities to England, where he became leader of the Chartist movement, advocating extreme measures in his speeches, and in a paper, The Northern Star, which he established at Leeds. In 1846 he was imprisoned for seditious libel. In 1847 he was elected M.P. for Nottingham, and in 1848 he presided over the great Chartist demonstration at Kennington. Found to be insane in 1852, he died in London, Aug. 30, 1855. See Chartism.

**O'Connor, THOMAS POWER** (1848-1929). Irish journalist and politician. Born at Athlone, Oct. 5, 1848, he was educated there and at Queen's College, Galway, and became a journalist in Dublin in 1867. In 1870 he joined the Daily Telegraph. He founded and was first editor of the Star, the Sun, the Weekly Sun, M.A.P., and T.P.'s Weekly (later revived as T.P.'s and Cassell's Weekly). A fluent and picturesque writer, he was the author of a brilliant life of Lord Beaconsfield and studies of

the Parnell movement, and Gladstone's house of commons. In 1880 "Tay Pay" was returned as



J. P. Russell  
Russell

Nationalist M.P. for Galway. Elected in the same interest in 1885 for both Galway and the Scotland division of Liverpool, he chose the latter constituency, and represented it until his death. He earned great popularity in the house of commons, of which he became the Father, and in 1924 was made a privy councillor. He was president of the United Irish League of Great Britain from 1896, and in 1917 became chairman of the British board of film censors. He died Nov. 18, 1929. His Memoirs of an Old Parliamentarian appeared in 1929. Consult Life, Hamilton Fyfe, 1934.

**Ocotlan.** The principal port of the lake of Chapala, Mexico, a body of water 70 m. by 20 m. Constant trainloads of cereals, fruit, and vegetables travel to Mexico City and even to the U.S.A. from this busy port. Pop. 15,000.

**Octane Number.** A means of rating spark-ignition engine fuels in terms of their ignition quality. When the compression ratio of such an engine is increased, all other factors being constant, the power output will also increase until detonation (knock) commences, when it will decline. Normal paraffin hydrocarbons are poor in this respect, aromatic hydrocarbons good, and certain isoparaffins and alcohols excellent. A poor fuel can be improved by adding very small quantities of substances such as tetra-ethyl lead. To rate fuels in order of their ability to resist detonation the characteristics of the fuel under test are compared with those of mixtures of normal heptane (a very poor fuel) and iso-octane (2:2:4-trimethylpentane, a high-grade fuel). The percentage of iso-octane in the mixture which has the same characteristics as the fuel under test is said to be the octane number of that fuel. On this basis the highest number should be 100 and no fuel should be rated above iso-octane, but such fuels are known. These are compared with mixtures of n-heptane + 4 ml. tetra-ethyl lead and iso-octane + 4 ml. tetra-ethyl lead, when a maximum rating of 120 can be reached.



Although the octane number is supposed to be a measure of the knock characteristics of a fuel, other factors sometimes enter, *e.g.* engine design and adjustment, load, and atmospheric conditions. Persistent detonation in aero engines, because of much more severe operating conditions, cannot be tolerated, and therefore for rating aviation spirits the details of the testing method are altered so as to take those special factors into account.

**Octans.** Constellation which surrounds the Southern Pole. It is of considerable extent, but its stars are faint. The Southern Pole star, Sigma Octantis, is between fifth and sixth magnitude. *See* Constellation.

**Octave** (Lat. *octavus*, eighth). Word used in several senses. (1) In music, an interval of 8 scale steps, and the second note of the harmonic series. It is a perfect consonance, and the upper note of an octave bears the same alphabetical name as the lower note. An organ stop of 4-ft. pitch on the manuals and of 8-ft. pitch on the pedals is called an octave. (*See* Organ). (2) In literature, the first two quatrains of the sonnet, written on the same pair of rhymes, are termed the octave, and the word is applied less technically to any stanza of eight lines. (3) In ecclesiastical terminology, an octave is the eighth day after a festival, the feast day itself being reckoned as the first.

**Octave Flute.** Small flute sounding an octave higher than the ordinary flute. *See* Piccolo.

**Octavia** (d. 11 B.C.). Sister of Octavian, afterwards the Roman emperor Augustus, and wife, first of G. Marcellus, by whom she was the mother of Marcus Marcellus (*q.v.*), and secondly of Antony, the triumvir. The desertion of Octavia by Antony for Cleopatra was an important factor in causing the war between Octavian and Antony.

**Octavian.** *See* Augustus.

**Octavo** (Lat. *octo*, eight). Term used in connexion with the size of books. An octavo (8vo) volume is one in which the sheets have been cut into eight. The size of a page is usually about 5 ins. by 9½ ins.; royal octavo is larger.

**Octet** (Lat. *octo*, eight). Musical composition for eight performers. The term is sometimes applied to a double quartet, but belongs properly to a work in which the eight instruments are treated independently. Schubert wrote a famous one for clarinet, horn, and bassoon, with two violins, viola,

violoncello, and double bass. Gade, Svendsen, and Mendelssohn wrote octets for strings alone, and Beethoven left one, called Grand Octuor (Op. 103), for two oboes, two clarinets, two horns, and two bassoons. An orchestra of eight performers is also called an octet.

**October** (Lat. *octo*, eight). Eighth month of the old Roman and tenth of the Christian calendar. For short periods it was given different names in honour of Roman emperors, *e.g.* Domitianus, in honour of Domitian; and Invictus (unconquered), in allusion to the athletic prowess of Commodus. It was also called temporarily Faustinus, in honour of Faustina, wife of the emperor Antoninus Pius. The Anglo-Saxons called it Winter-fylleth (winter full moon), from the supposed beginning of winter with the October full moon. *See* Calendar.

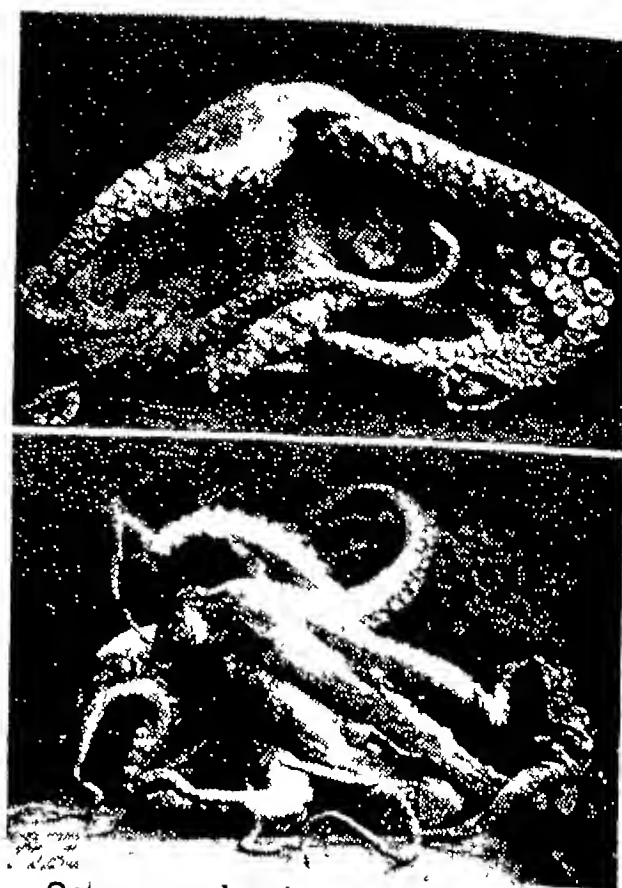
**October Revolution.** Name given to the Petrograd revolution which was the first stage in the Bolshevik rising in Russia. By western calculations the outbreak occurred on Nov. 7, 1917, but in Russia the Greek Orthodox calendar was in force, which is 13 days behind the rest of Europe; Russians therefore regard Oct. 25, 1917, as the date of the Revolution, and accordingly speak of the October Revolution to distinguish it from that of March, 1917.

**Octodon.** Generic name of a rodent mammal known as the degu. In form it is like a common rat, is about 8 ins. in length, and has yellowish-brown fur, mottled with black, on the upper parts, and yellowish below. It occurs in Chile and Peru. The family Octodontidae includes about 27 genera.

**Octopus** (Gr. and Lat. *octo*, eight; *pous*, foot). Genus of cephalopodous (head-footed) molluscs. There are numerous species, the common octopus (*O. vulgaris*) occurring round the S. British coasts. It has a rounded bag-like body, with a large head bearing eight long "arms" or tentacles thickly studded with suckers. It is greyish brown in colour, with numerous tubercles on the skin, and it can alter its hue considerably to suit its surroundings. When irritated, it becomes dark, and large tubercles rise on the skin. The mouth is provided with a horny beak resembling a parrot's. The round eyes are prominent and staring.

The octopus lurks in holes in the rocks and crawls on the sea bottom in search of the crustaceans and bivalves on which it chiefly feeds; but it can swim backwards by forcibly

expelling water from its siphon. The female produces about 50,000 eggs in the season. These resemble grains of rice, and are attached in stalked clusters to rocks and stones.



*Octopus vulgaris* creeping forward; top, turned on its side, showing tentacles studded with suckers

On the Mediterranean shores and in the Channel Islands the octopus is dried and used for food. *See* Animal colour plate; Cephalopoda.

**Octroi** (Fr. *octroyer*, to grant). French name for a local tax, one in the nature of an import duty. Roman in origin, the custom took root in France, but its modern use dates from the 12th century. Many cities and towns obtained from the king the right to levy octroi duties and retained it until the Revolution. They were paid on goods sold in their markets or entering their town. A percentage of the duties was usually paid to the national treasury, and they were let out to farmers. The octroi was abolished in 1791, but restored in 1798 to Paris, and later to other cities, under conditions which have been several times revised. It was abolished in Belgium in 1860, and in Great Britain never found favour, though the coal and wine dues which were levied at one time on goods entering the port of London were a kind of octroi. *See* Customs; Taxation.

**Odde.** Village and tourist resort of Norway. It stands at the S. end of the Sør fjord, an arm of the Hardanger fjord, and is the terminus of the routes from Telemarken and Stavanger fjord.

**Odd Fellows,** ORDERS OF. Fraternal, benevolent, and sickness insurance friendly societies. Founded early in the 18th century, when mentioned by Defoe, the earliest known lodge was existing in London in 1745. Members

were assisted in sickness or poverty from lodge funds. In the latter half of the century the order was proscribed as seditious, but in 1813 a great revival took place at Manchester, where the Independent Order of Odd Fellows, Manchester Unity Friendly Society, the largest order, was founded. This speedily absorbed most of the minor lodges in Great Britain, and in 1819 spread to the U.S.A. Daughter organizations exist in most civilised countries. See Friendly Societies.

**Ode** (Gr., chant). In its literal sense, any poem written to be sung to musical accompaniment. The Greek ode developed along two wholly different lines. As the subjective expression of personal emotion it was moulded by Alcaeus, Anacreon, and Sappho into the lyrical stanzas still known by their names, adapted with exquisite perfection to the genius of the Latin language by Catullus and Horace, and reproduced in an infinite variety of graceful shapes by lyricists of every cultured race. As the ritual hymn solemnly chanted by the chorus at festivals primarily religious in intention, the ode was developed by Stesichorus, Simonides, and Bacchylides, and brought to its finest perfection of structure and fiery splendour by Pindar (*q.v.*).

It is to the stately choric composition that the word ode is now more generally applied. But while many poets, impressed by the majesty and the concurrent exuberance of the Pindaric ode, have sought to capture its spirit and acclimatise it in their own country, few have had the perception and the learning necessary to analyse its composition and master the intricate detail of its technical structure. The earliest Stesichorean ode, with its division into strophe, antistrophe, and epode, has been reproduced with considerable success by several poets, Congreve, Gray, and Matthew Arnold among them. The true Pindaric ode still remains a thing apart, unmatched. Meanwhile, though his odes were not Pindaric at all, Cowley in his so-called Pindaric Odes created a literary form, now generally called the irregular ode,

very suitable to the English genius, and put to triumphant use by Milton, Dryden, Wordsworth, Tennyson, and by Francis Thompson in *The Hound of Heaven*.

**Odenathus**. Prince of Palmyra, and husband of Zenobia. After the defeat of the army of the Roman emperor Valerian by the Persians, he organized a successful resistance, and in a series of campaigns from 262 to 264 restored Mesopotamia to Rome, and carried his arms as far as Ctesiphon. For these services he was rewarded by Valerian's successor Gallienus with the title of Emperor, but was shortly after assassinated. His widow, Zenobia, then reigned as queen.

**Ödenburg**. Alternative name for the Hungarian town more usually called Sopron (*q.v.*).

**Odense** (*Odins-ø*, i.e. Odin's Island). City of Denmark, capital of Fünen, and third largest city in the kingdom. Situated near the mouth of the river Odense, and connected with Odense Fjord by a ship canal, it has a good harbour, a castle, museum, technical schools,



Odense, Denmark. House where Hans Christian Andersen was born

seminary, and a park. The cathedral of S. Knud, founded 1086, is one of the finest Gothic edifices in Denmark; the church of Our Lady dates from the 12th century. It is a fine town, with a modern town hall. Cloth, gloves, chemicals, and tobacco are manufactured, and grain, eggs, butter, bacon and other dairy produce, and hides exported. Odense was the meeting-place of several diets and councils, and the birthplace of Hans Andersen, whose house has been converted into a museum. Pop. (1950) 100,940.

**Odenwald**. Wooded mt. region in the *Land* of Hesse, W. Germany. It lies between the Neckar and the Main. Composed of basalt, gneiss, granite, and syenite, the mts. have many valleys and ravines. The highest peak, the Katzenbuckel, is 2,057

ft. in alt. and has an observation tower. Odenwald is a populous region and there are castles and hamlets in the valleys. The Bergstrasse on the W. Odenwald is rich in legend and is mentioned in the *Nibelungenlied* (*q.v.*).

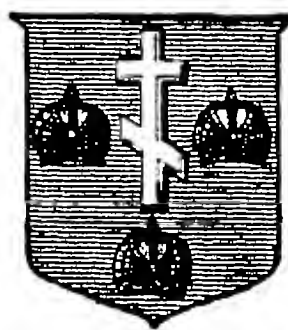
**Oder**. A river of Eastern Europe. It rises near Kozlau in Moravia, Czecho-Slovakia, and flows through Silesia and Pomerania to the Baltic Sea at the Stettiner Haff. In Silesia it occupies a valley between the Bohemian and Polish plateaux. It has been canalised to a depth of at least 5 ft. for 480 m. from the mouth of Swinemünde to Ratibor, although boats of 400 tons stop at Kosel, the river port for the mining region of Upper Silesia. The chief tributary is the Warta (Warthe), which with its affluent the Netze drains the W. plains of Poland. Canals connect with the Elbe and Vistula. Length, 550 m.

When in the last stages of the Second Great War the Russians pressed beyond the Vistula, the Oder formed the last natural obstacle before Berlin, and by Jan. 24, 1945, Koniev's troops had reached the upper Oder and captured Oppeln. He then surrounded and cut off Breslau (Wroclaw) and Glogau on the opposite bank and deployed his troops on the Neisse. Farther north, Zhukov reached Küstrin (Kistrzin), 60 m. from Berlin, by Feb. 7, and set about extending his line to the N. Küstrin fell March 12, Altdamm, on the Oder estuary, March 20, and by the end of March the E. bank of the river was in Russian hands.

In the S., Breslau and Glogau held out, and the Russians paused; but on April 16 they crossed the Oder. Frankfort-on-Oder was captured April 23, the same day as the Russians entered Berlin. (See Russo-German Campaigns.)

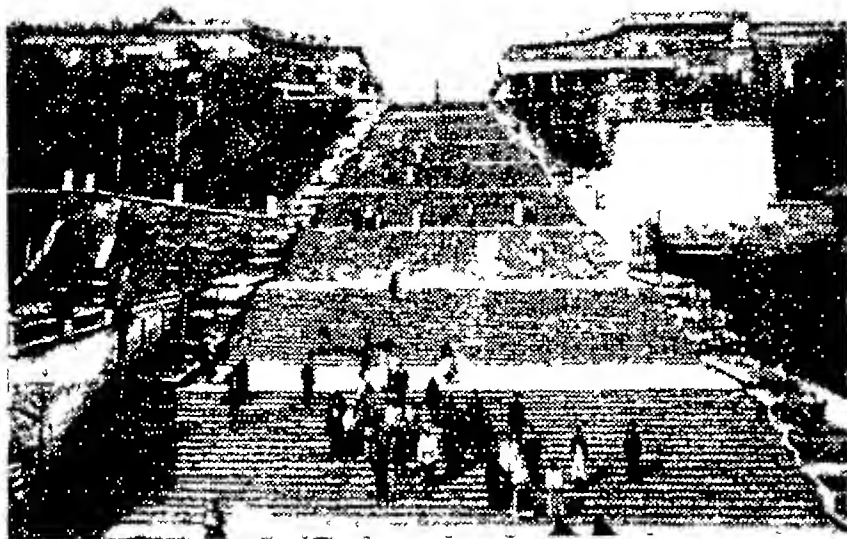
At the Potsdam Conference (*q.v.*) it was agreed that Poland should occupy E. Germany up to the Oder and Neisse rivers pending the settlement of her claims against Germany in the peace treaty.

**Odessa**. City and seaport of Ukraine S.S.R., the chief business centre. It is situated 25 m. N. of the mouth of the Dniester, 90 m. S.W. of Kherson, and is the terminus of the south-western rly. It contained a large cathedral, university, and observatory.



Odessa arms





Odessa, Ukraine. The broad stairs which descend from the main boulevard to the harbour

Odessa was founded, near a site settled by the Greeks, by Catherine II in 1795 on the shores of the Black Sea, in order to provide the country with one ice-free winter port. Cut off from communication with the Allies when Turkey closed the Dardanelles, in 1914, Odessa was bombarded by the Turkish fleet on several occasions. It was occupied from the land side by the Germans on March 12, 1918, and was taken by the Bolsheviks in 1920. The Soviet government made it an open port.

Heavily bombed by German aircraft in June, 1941, Odessa was encircled by a German-Rumanian army by Aug. 23. The defenders held out until Oct. 16, when the city was evacuated after all buildings and industrial plants had been destroyed. On April 10, 1944, the 3rd Ukrainian army captured the city from the Germans and Rumanians, the Russian Black Sea fleet and air force preventing any large scale evacuation of the enemy by sea. Pop. (1956 est.) 607,000.

**Odets**, CLIFFORD (b. 1906). American dramatist. Born at Philadelphia, July 18, 1906, and educated in New York, he became an actor in repertory during 1923-28, also playing in Theatre Guild productions. His first play, *Waiting for Lefty*, established his reputation as a playwright, and he achieved popular success with *Awake and Sing*, 1935 (produced at the Arts Theatre, London, in 1942). Other plays included *Paradise Lost*, 1936; *Golden Boy*, 1937; *Clash by Night*, 1942; and *Rocket to the Moon* (produced at S. Martin's Theatre, London, in 1948).

**Odeum**. Latin form of the Greek *Odeion*, name for a building devoted to musical performances. Such buildings used to be found in many Greek cities, but the most famous were the odeum of Pericles S.E. of the Acropolis at Athens,

and that built by Herodes Atticus at the foot of the Acropolis in Athens A.D. 160. The Athenian odeum held about 8,000 people, and its ruins still stand.

**Odiham**. Village of Hants, England. It is 8 m. E. of Basingstoke, and has a Gothic church containing interesting brasses, also some ancient houses. The ruins of Odiham Castle, 1 m. N.W., date from the 14th century.

**Odin**. In Norse mythology, the greatest of the gods. He is the Anglo-Saxon Woden and German Wodan, and his name, cognate with Lat. *vates*, a seer, probably means frenzied. Creator of the world and of mankind, he is called All-father. Contrasted with the rough peasants' god Thor, he was worshipped specially by the noble families, many of whom claimed descent from him, and was a patron of culture, inventor of runes, and god of wisdom, poetry, magic, and prophecy. In various forms, but chiefly as a one-eyed old man wrapped in a mantle, he wandered through the earth. As a war god Odin was lord of the Valkyries, and those who fell in battle, regarded as sacrificed to him, were received by him into Valhalla. See Mimir; Valkyrie; Wednesday; Mythology; Ymir.

**Odo** (c. 1036-97). A Norman prelate. A half-brother of William the Conqueror, who made him bishop of Bayeux in 1049, he fought at the battle of Hastings and was made earl of Kent in 1067. After William's death he led a rebellion against William Rufus, and escaped to Normandy, dying on the first crusade, at Palermo, in Feb., 1097. See Bayeux Tapestry.

**Odoacer**, ODOVAKAR, OR OTTO-KAR (c. 435-493). German soldier. A prince of one of the tribes on the Danube, he entered the Roman army and became one of the imperial bodyguard. Putting himself at the head of a revolt of German mercenaries, he compelled the emperor Augustulus to abdicate in 476, was raised to the rank of patrician by Zeno, emperor of the East, and became ruler of the West, nominally as a representative of Zeno, but in reality independent. Zeno, jealous of his success, persuaded Theodoric the Ostrogoth to attack him. Defeated on the Isontius (Isonzo), 489, and at Verona, 490, Odoacer was be-

sieged in Ravenna for three years. Theodoric at first treated Odoacer well and accepted him as joint ruler, but on the pretext that he was scheming to gain possession of the whole of Italy, treacherously slew him, March 5, 493.

**Odometer** (Gr. *hodos*, way; *metron*, measure). Instrument to register the number of revolutions of a carriage wheel to which it is attached, and thus the distance travelled by the vehicle. It consists of two wheels of the same diameter placed face to face and turning freely on a common axis. The edge of one wheel is cut into 100 teeth and that of the other into 99 teeth, an endless screw working in the notches of the wheels. When the screw has turned 100 times, the wheel with 99 teeth will have gained one notch on the other, which gain is registered on an index. Modern speedometers incorporate two odometers; one to record mileage run from zero to 99,999 m., the other the mileage of individual journeys.

**Odontoglossum**. Large genus of orchids of the family Orchidaceae, natives of tropical America. They have pseudo-bulbs and sword-shaped, more or less leathery leaves. The large, showy flowers are in handsome sprays. They are distinguished by the column being long and narrow, and by the base of the lip being parallel with the face of the column. See Orchid, colour plate; Orchis.

**Odontolite**. Fossilised bone or tooth, tinged blue by impregnation with phosphate of iron, or green by copper. It is known as bone turquoise or occidental turquoise, and when cut *en cabochon* resembles the true gem; but it is softer, appears grey by candlelight, and bleaches in alcohol.

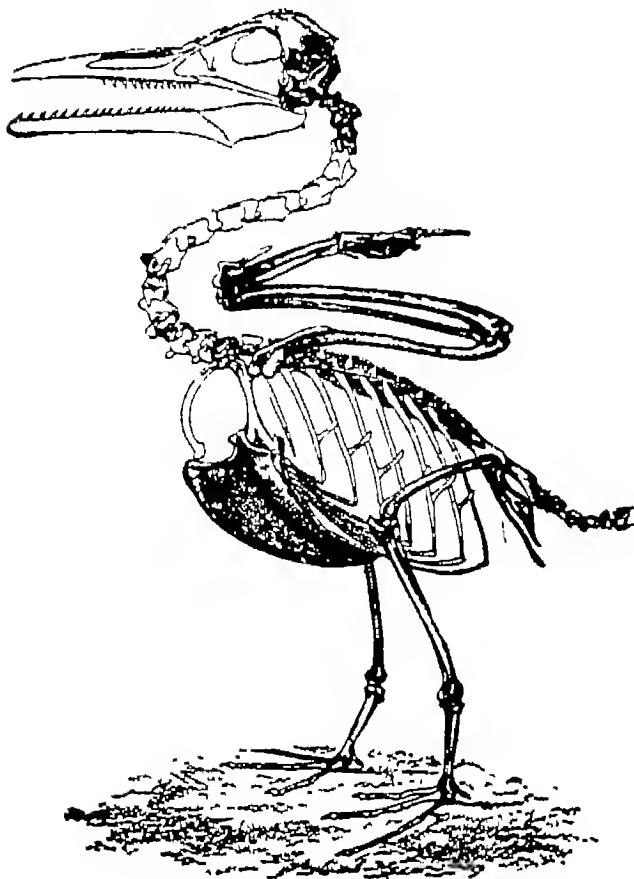
**Odontology** (Gr. *odous*, tooth; *logos*, science). Science relating to the teeth. See Dentistry; Teeth.

**Odontornithes** (Gr. *odont*, tooth; *ornith*-, bird) OR ODONTOGNATHAE (Gr. *odont*-, tooth; *gnathos*, jaw). Name given to a group of fossil toothed birds. Though living birds have no teeth, there are embryonic evidences of their descent from toothed birds. Fossil remains of the latter, which include the orders Hesperornithiformes and Ichthyornithiformes, are found in Cretaceous and Jurassic beds. The teeth of these fossil birds closely resemble those of present-day reptiles. See illus. in facing page.

**O'Duffy**, EORN (1892-1944). Irish politician. Born in Monaghan, Oct. 30, 1892, he joined the

I.R.A. in 1917, becoming chief of staff. When the Irish Free State was created in 1922 he was given the rank of general and appointed head of its forces and chief of the civic guard. Dismissed by Eamon De Valera in 1933, he formed his own force, the national guard, adopting the blue shirt as its uniform. Declared illegal, this body fused with Cumann na nGaedheal to form the Fine Gael party, of which O'Duffy was president. In 1934 the latter withdrew his blueshirts from the coalition to form the National Corporate party. He led an Irish brigade which fought on the side of Gen. Franco in the Spanish Civil War; and published *The Crusade in Spain*, 1938. He died Nov. 30, 1944.

**O'Dwyer, Sir Michael Francis** (1864-1940). British administrator. Born April 28, 1864, he was educated at S. Stanislaus college, Tullamore, and Balliol College, Oxford, and entered the Indian civil service in 1885. Appointed lieut.-gov. of the Punjab in 1913, he was concerned with Gen. Dyer in the suppression of the Amritsar riots in 1919, and was relieved of his position. It was made clear, in the course of a libel action he brought in 1930 against a member of the Indian government, that O'Dwyer was in no way responsible for Dyer's action in opening fire on the rioters, although he supported the general against critics. He was made K.C.S.I. in 1913. On March 13, 1940, he was shot dead by an Indian at a meeting at the Central Hall, Westminster. He was the author of *India as I Knew It*, 1925.



**Odontornithes.** Reconstruction of skeleton of *Ichthyornis victor*, one-sixteenth actual size. See facing p.

**Odysseus.** Greek form of the name of the hero called in Latin Ulixes and later Ulysses. In Greek legend, he was king of Ithaca, one of the leading heroes on the Greek side in the Trojan war, and the type of a resourceful and versatile leader. Many tales were told of the ways in which he distinguished himself by his prowess and wisdom.

His wanderings after the fall of Troy are the theme of the *Odyssey*. Having reached Ithaca, he found that during his absence his wife Penelopē had been plagued by about 100 suitors for her hand, who had quartered themselves in the royal palace. Disguised as a beggar, and making himself known only to his son Telemachus and a trusty swineherd, Odysseus made his way to the palace, and was discovered by an old nurse. Penelopē, apprised of the return of her husband, agreed to give her hand to the suitor who should be able to bend the great bow of Odysseus. He alone succeeded, and then turned its arrows upon the suitors, whom he slew with the help of Athena and Telemachus. Odysseus was unwittingly slain by Telegonus, his son by Circē.

**Odyssey.** Greek epic poem attributed to Homer. It is in 24 books dealing with the 10 years' wanderings of Odysseus on his way home after the fall of Troy. After relating Odysseus's many surprising adventures, such as those with the lotus-eaters, the Cyclops, the enchantress Circē, the shades of the dead, the Sirens, the nymph Calypso, the Phaeacians, and other strange happenings, the poem ends with his return to his native Ithaca. Whatever may be the secret of its authorship, the *Odyssey* is a rich storehouse of folklore and romance, and one of the world's masterpieces of literature. There are verse translations by Pope and others, and a prose version by T. E. Lawrence, 1935. See Homer.

**Oecumenical.** Term of Greek origin, meaning "of the whole world." It is applied to a Church council of bishops from all countries, or one whose decisions have been accepted by the universal Church. See Council.

**Oedema** (Gr., a swelling). Effusion of fluid into the tissues of the body. See Dropsy.

**Oedipus** (Gr., swollen foot). In Greek legend, son of Laius, king of Thebes, and Jocasta. An oracle having declared that Laius would perish at the hands of a son born of Jocasta, Oedipus, at birth, was exposed on the mountains with his

feet pierced. There he was found by shepherds, by whom he was taken to Polybus, king of Corinth, who brought up Oedipus as his own son. The Delphic oracle declared that he would slay his father. Oedipus happened to meet Laius, and in a sudden brawl killed him without suspecting his identity.

At this time the Sphinx (*q.v.*) was plaguing Thebes by devouring everyone who failed to answer a riddle. The Thebans proclaimed that the kingdom and the hand of Jocasta would be the reward of the man who rid the country of the monster. Oedipus essayed the adventure, and when the Sphinx propounded the riddle: What is the being which has four feet, two feet, and three feet; but its feet vary, and when it has most feet it is weakest? Oedipus answered that it was man. Enraged at receiving the correct answer, the monster threw herself from the rock. Oedipus thus became king of Thebes, and unwittingly married his own mother, by whom he had children. A plague then ravaged the land, and an oracle having declared that the plague would continue until the slayer of Laius was found, Oedipus set himself to discover the murderer, and learnt the truth from the prophet Tiresias. Jocasta hanged herself, and Oedipus put out his own eyes. The story is handled in the two great plays by Sophocles. Among later dramatists, Corneille, Dryden, Voltaire, and Jean Cocteau have treated the subject. See *Antigonē*; Sophocles.

**Oedipus Coloneus** (Oedipus at Colonus). Tragedy by Sophocles. It takes its name from the grove of the Eumenides at Colonus, near Athens, whither the blind and weary Oedipus is led by his daughter Antigonē, there to find relief from his bodily and mental sufferings in death. One of the most beautiful of the choric passages contains a glorification of the poet's home. The date of the play is unknown.

**Oedipus Complex.** Neurosis of boyhood. Freud (*q.v.*) claimed to have discovered its existence, naming it after the Greek king Oedipus, who, in ignorance of his parentage, slew his father and married his mother. The corresponding condition in girls is called an Electra complex. Until the age of four to six the love of most children is directed primarily towards their mothers; it is a possessive and greedy emotion, which gives rise to much jealousy, sometimes unconscious, against those who interfere with the



child's demands upon the mother, e.g. a younger child or the father. At about five many girls tend to transfer their love to their fathers, so that both girls and boys are then devoted to the parent of the opposite sex.

Freud stated that this emotion was largely sexual, though in general unconsciously. In normal children, however, the Oedipus situation is outgrown without psychological damage, since the child learns to repress much of his emotional life. If, however, a child is treated leniently by the parent of the opposite sex and disciplined sternly by the parent of the same sex, considerable psychological difficulties may be caused. The normal growth of the love instincts will tend to be impeded and sexual development may be abnormal. Even if he escapes actual neuroses or perversions, the child's emotional relationships may well be unsatisfactory for the rest of his life. According to Freud, the common feature in all persons suffering from an unresolved Oedipus complex is that in the field of personal relations both the conduct and the emotions are dictated by unconscious urges arising from past relations with their parents. *See* Fixation; Homosexuality; Neurosis; Perversion. *Consult* Introductory Lectures on Psychoanalysis, S. Freud, 1917; The Psychoanalytic Study of the Family, Flugel, 1921.

**Oedipus Tyrannus** (King Oedipus). Tragedy by Sophocles, produced 430 or 429 B.C. Although generally regarded as the greatest of his plays, it failed to obtain the prize at the Dionysia. It is one of the few ancient tragedies which have been successfully produced before a modern audience in spite of the somewhat repellent plot. Two noteworthy productions, one with Martin Harvey in the main rôle (1912) and one with Laurence Olivier (1945) have reached the London stage as Oedipus Rex. Olivier used a translation by Yeats. *See* Oedipus.

**Oehlenschläger**, ADAM GOTTLÖB (1779-1850). Danish poet. He was born Nov. 14, 1779, at Vesterbro, Copenhagen, became an actor, but literature absorbed him, and he fell under the influence of Goethe and other German thinkers. In 1803 he



A. Oehlenschläger,  
Danish poet

published his first volume of poems, which included the play entitled The Eve of St. John. More books followed, that winning most fame being his drama Aladdin. In 1805 the Danish government allowed him a pension which enabled him to spend some years in Halle, Berlin, Weimar, Dresden, Paris, and Switzerland. In 1810 he was appointed professor of aesthetics at the university of Copenhagen, and continued to produce works remarkable for their wealth of invention and wide range. He died Jan. 20, 1850.

**Oenanthic Ether** (Gr. through Lat., *oenanthe*, wine blossom). The essential oil which gives characteristic aroma to wine; called oil of cognac. *See* Wine.

**Oenōnē**. In Greek legend, a nymph of Mt. Ida, and wife of Paris, who deserted her for Helen. Her story is the subject of a poem by Tennyson. *See* Paris.

**Oerlikon**. Alternative spelling of the name Orlikon. *See* Orlikon Gun.

**Oersted**, HANS CHRISTIAN (1777-1851). A Danish physicist. Born at Rudkjøbing, Langeland, and educated at Copenhagen he won a travelling scholarship and visited Holland and Germany and Paris. In 1820 he made the discovery, on which his fame rests, that a magnetic needle was deflected by a current in a wire passing below or over it, the initial discovery in electro-magnetism. For the discovery he was awarded the Copley medal of the Royal Society. The oersted, the unit of magnetic field strength, is named after him. *See* Ampère.



Hans C. Oersted,  
Danish physicist

**Oesel**, ŌSEL, EZEL, OR SAARE MAA. Island of Estonia S.S.R. Situated at the entrance to the Gulf of Riga, the island has an irregular coastline and a low, level surface. Farming, horse-rearing, and fishing are the principal occupations of the inhabitants. Karesare (formerly Arensburg) is the chief town. Area, 1,010 sq. m. In 1939 it was fortified, and made a Soviet military base, as a result of the assistance pact signed in Sept. between Estonia and Russia. Evacuated during the Russian retreat of 1941, it was not cleared of Germans until Nov. 24, 1944.

**Oesophagus** OR GULLET. Muscular tube, lined internally with

mucous membrane, which lead from the pharynx or posterior part of the mouth to the stomach. About nine inches in length, it passes down behind the trachea and in front of the spinal vertebrae. In the chest it lies behind the left bronchus and the pericardium.

Obstruction of the oesophagus may result from swallowing a foreign body, such as a fish bone, coin, false teeth, etc. The obstruction can sometimes be withdrawn by a suitable oesophageal forceps but when firmly impacted there is serious risk of injury to the walls of the oesophagus in the process of extraction, and the case should be promptly referred to a surgeon.

**Oestrogen**. Term for one of a group of hormones which produce female characteristics. Oestradiol, the typical oestrogen, which is formed by the ovary and the ovarian follicles, plays the dominant rôle in the sexual cycle of female animals. It is sometimes used in medicine in the treatment of symptoms of the menopause. Stilboestrol, a synthetic oestrogenic compound, has been used successfully to control the symptoms in cancer of the prostate. *See* Endocrinology.

**Oestrous Cycle**. Biological term. In almost all animals reproduction takes place at certain seasons. When the cooperation of male and female individuals is necessary a mechanism has been evolved which ensures that sperms shall meet eggs at a time when these are ready for fertilisation. Eggs are produced by the ovary of the female mammal at regular intervals. The timing of this ovulation is controlled by the products of the pituitary gland (*q.v.*). The cyclicity imposed upon the ovary by this gland produces a resulting cyclicity in the appearance of a hormone called oestrin. Oestrin enlarges the uterus in, for instance, the mouse, and also brings about a change in the epithelium lining the vagina. At ovulation, therefore, the uterus is ready for the egg to develop in, and the vagina is ready for the introduction of the male organ during mating. In fact the female will allow copulation only at this time. If the female mouse is not mated, she will reach this state every four days or so; this cycle of recurring sexual desire is the oestrous cycle. It is seen in a bewildering number of variations among dogs, cows, sheep, pigs, ferrets, etc.; the period varies from a few days to over a year. If a female mouse becomes pregnant, her cycle stops; so it does if she is mated to a

sterile male, when she is said to exhibit pseudo-pregnancy. At the end of pseudo-pregnancy she will experience a pseudo-birth, and may produce milk. The cycle will then recommence. In primates such as man, the normal cycle is of this latter kind, involving a regular pseudo-pregnancy terminated each time by a recurring pseudo-birth, or menstruation (*q.v.*). Ovulation in the primate takes place midway between menstruations. It will be seen that the oestrus, or coming on heat, of a bitch or a cow, though it may be accompanied by some bleeding, has no resemblance to the menstruation of a woman.

**Oeuvre, L'.** French newspaper. Originally founded in 1904 as a weekly journal by U. Gohier and G. Téry, it was transformed into a daily in 1915, when it attracted many famous contributors. Radical in outlook, it remained independent and critical, and during 1925-39 grew enormously in importance, eventually achieving a circulation of 500,000. It was one of the first French papers to be abolished by the Germans in 1940. After the liberation of France it did not appear again.

**O'Faolain, SEAN** (b. 1900). Irish writer. He was born Feb. 22, 1900, and educated at the national university of Ireland and at Harvard. He was lecturer in English at Boston College, U.S.A., in 1929, and at S. Mary's College, Strawberry Hill, Middlesex, 1929-33. He made his reputation as a writer of vividly imaginative prose with *Midsummer Night Madness*, 1932, and *A Nest of Simple Folk*, 1933. He wrote biographies of Constance Markievicz, 1934; Wolfe Tone, 1937; De Valera, 1939; O'Neill, 1942; Newman, 1952; and books on Ireland: *An Irish Journey*, 1940, and *The Story of Ireland*, 1943.

**Offa** (d. 796). King of Mercia. A member of the royal house, he obtained the crown by crushing a rival in 757. Mercia was then in a shrunk and distressed condition, but Offa restored its fortunes, victorious battles bringing Kent, Essex, and probably Sussex and other regions under his rule, and driving the Welsh farther into their own land. He was overlord of all England except Northumbria, created a third English archbishopric, that of Lichfield, and founded St. Albans Abbey.

**Offal.** Word, literally off-fall, meaning refuse or waste. It is used for feeding stuffs for animals, these consisting of husks, etc., which are stripped from grain. It is also used for those parts of the

bull, sheep, or pig which are not eaten as food by human beings. In both Great Wars it included those parts of the animal which were eaten, but were not rationed, such as liver, kidney, sweetbread, and tongue.

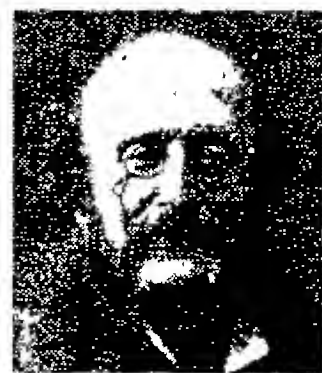
**Offaly.** Co. of the Irish Republic, in the prov. of Leinster. Area 771 sq. m. The Shannon forms its W. boundary, and it is also watered by the Brosna, Barrow, and small streams. It includes part of the bog of Allen, and is flat, except in the S., where are the Slieve Bloom mts. Oats, barley, and potatoes are the main crops; cattle, sheep, and pigs are reared. Tullamore is the co. town. Remains of the most extensive group of ancient religious establishments in Ireland are at Clonmacnoise, on the Shannon. In early times the co. formed part of the kingdom of Offaly, and afterwards part of Glenmallery. In 1556 it was named King's co., in honour of Philip II of Spain, husband of Mary I of England, but in 1921 reverted to the earlier name. Offaly combines with Laoighis (Leix) to send five members to the dáil. Pop. (1956) 51,970.

**Offa's Dyke.** Linear earthwork 120 m. long running N.-S. from the mouth of the Dee to the Severn near Chepstow, through the counties of Flint, Denbigh, Montgomery, Shropshire, Radnor, Hereford, and Gloucester. It was built by King Offa of Mercia c. 785 as a boundary between Mercia and the Welsh, and is mentioned by the 9th-century writer Asser. It consists of an earthen mound averaging 7 ft. in height, with a ditch on its west side. It is interrupted for a short distance near Shrewsbury, and for 25 m. in Herefordshire, where the Severn and the Wye respectively are used as the frontier line. A second earthwork, Wat's Dyke, runs parallel with its northern half a few miles to the E., and is thought to mark a subsequent change in the frontier. *Consult* Offa's Dyke, C. Fox, 1955.

**Offenbach.** Town of Hesse, Germany, on the Main, 5 m. E. of Frankfurt. It dates at least from 977. It has a fine Renaissance castle, built 1559-78, several 18th-century churches, and a town hall dating from 1775. It is a centre of the leather goods industry. Pop. (1955 est.) 102,000.

**Offenbach, JACQUES** (1819-80). German-born French composer. Born at Offenbach-on-Main, June 21, 1819, son of a cantor, in 1833 he

entered the Paris conservatoire, where he studied the 'cello; in 1837 he joined the Opéra-Comique orchestra, and began to write operettas. *Pepito*, 1853, attracted little attention, but *Les Deux Aveugles*, 1855, scored success.



J. Offenbach,  
French composer

Offenbach took the *Théâtre Comte*, renamed it the *Bouffes Parisiens*, and produced there a succession of witty and sparkling light operas which for later generations conjured up the gaiety of the Second Empire. Of some 70 pieces for the stage, based mainly on the libretti of Meilhac and Halévy, the most famous are *Orphée aux Enfers*, 1858; *La Belle Hélène*, 1865; *La Vie Parisienne*, 1866; *La Grande Duchesse de Gérolstein*, 1867; *Madame Favart*, 1878. His most ambitious effort, *Les Contes d'Hoffmann* (*Tales of Hoffmann*), was produced posthumously in 1881; in England it failed to achieve popularity until presented in 1910 at His Majesty's. Offenbach died Oct. 4, 1880.

**Offence.** In law, the widest term used to describe breaches both of the criminal law and of regulations made for the public good, *e.g.* Public Health Acts. In England it is also used in a narrower sense, to describe an act which is not an indictable crime or misdemeanour, but is nevertheless punishable by fine, imprisonment, or other penalty, *e.g.* adulteration of food and drugs, selling short weight or measure, and breaches of town by-laws.

**Offertory.** Ecclesiastical term for that part of the Holy Communion service in which the alms and oblations of the congregation are offered, and oblation of the bread and wine is made at the altar by the officiating priest. It is also applied to the sentences read by the priest while the alms are being collected. In the Anglican Church these sentences have taken the place of the antiphon or anthem, called the offertory, which used to be said or sung while the people made their oblations. In early times the offerings included the bread and wine, as well as things needful for the maintenance of divine worship. The word offertory is loosely applied to all church collections; and to organ pieces suitable for playing while such collections are being made.



**Office of War Information.** This approximate equivalent in the U.S.A. of the British wartime Ministry of Information is referred to under Information.

**Officer.** A person serving in the army, the marines, navy, or air force on the terms of a commission granted by the sovereign. In a legal sense a military man is either an officer or a soldier, and the latter term embraces warrant officers (*q.v.*) and non-commissioned officers (*q.v.*). The symbol of commissioned rank is a sword, of which an officer is deprived when placed in arrest. On active service, for purposes of discipline, certain civilians who are permitted to accompany the army are graded so as to receive the treatment of officers, *e.g.* a newspaper correspondent would be dealt with in all respects as an officer, if holding a pass from the army commander—otherwise as a soldier. An officer who resigns his commission becomes again, in a legal sense, a civilian, but it is customary to address him by courtesy in the rank he held on leaving the army, if this was captain or higher.

In peace-time, an officer usually wears plain clothes (called mufti) when out of his quarters and off duty. He receives his pay monthly in advance through an army agent, buys his own uniform, and, if of field rank (major and above), is privileged to keep a soldier servant. He must, if unmarried, live in quarters and dine in mess (*q.v.*). His pay is supplemented by various allowances, and by serving the required number of years he is entitled to retired pay or gratuity. An officer must retire at a fixed age according to rank, but he may be permitted to retire at any time after a certain period of service, on a pension, the latter varying according to the service.

**Officer Cadet Training Unit.** Organization established in the Second Great War to train men for commissions in the army or R.A.F. regt. The course at infantry cadet training units lasted 2-4 months; several such units were maintained at home and overseas. The O.C.T.U. for the Royal Armoured Corps was at Sandhurst, where the course lasted 4-6 months. The R.A.F. regiment O.C.T.U. was in the Isle of Man. Cadets attending an O.C.T.U. wore a white band round their caps and white tapes on the shoulder-straps of the tunic. After the Second Great War, cadets for commissions in all arms went to Sandhurst, after a period in the ranks. There was an

O.C.T.U. at Mons Barracks, Aldershot, 1948-56, to train cadets from the ranks for national service commissions.

**Officer's Friend.** Name given to an officer who represents an accused brother officer at a court-martial.

**Officers' Training Corps.** Integral part of the Territorial army attached to universities, formerly also to schools. These corps train cadets for regular national service and Territorial army commissions; cadets are required to pass two examinations before being granted commissions. Corps officers are generally members of the staff of the university who hold commissions in the T.A. Instruction includes practical work and lectures on military subjects. During the Second Great War the O.T.C. was replaced by the senior training corps, which fulfilled the same functions. *See* Cadet.

**Official Receiver.** The public official who manages the affairs of bankrupts, taking over their property, realizing the assets, and distributing the money to the creditors. England and Wales are divided into bankruptcy districts, each with a receiver appointed by the board of trade, while others are attached to the bankruptcy department of the high court of justice in London. A trustee appointed for a bankrupt's estate is under the supervision of the receiver. Official receivers perform similar duties in cases where public companies go into liquidation. They were first appointed under the Bankruptcy Act of 1883. *See* Bankruptcy.

**Official Referee.** Official of the English high court of justice. He is one of three subordinate judges, whose business it is to try cases, or hold inquiries involving long investigations into accounts, etc. They usually sit in London, but an official referee may hold inquiries elsewhere, if that is the more convenient course. An appeal lies from an official referee to the court of appeal.

**Official Secrets Acts.** Acts punishing spying and similar offences. The principal Act, passed 1911, and amended 1920 and 1939, makes it a felony punishable by 14 years' penal servitude for any person, for any purpose prejudicial to the safety of the state, to be in a prohibited place (*e.g.*, arsenal or dockyard), make a sketch or note of use to an enemy, or to obtain or communicate any secret code word, document, or information.

It is a misdemeanour punishable by two years' imprisonment if a person, through misadventure and without any purpose prejudicial to the state, communicates to any unauthorised person any document or information relating to a prohibited place, or which has been entrusted to him by a person holding office under the crown, or which he has obtained through himself holding office under the crown. Registration with the police is compulsory for every person carrying on the business of receiving postal packets for reward and forwarding them to the persons to whom they are addressed.

A chief officer of police, if he has reasonable ground for suspecting that the offence of spying has been committed, may, with the permission of the home secretary, authorise an officer to require any likely person to furnish information about the offence. Anyone who refuses is guilty of a misdemeanour. A person suspected of having committed, or attempted to commit, or being about to commit an offence may be arrested without a warrant; but no prosecution may be brought without the consent of the attorney-general, solicitor-general, or director of public prosecutions.

**Offset.** This method of printing is described under Lithography.

**Off-side.** Term used in various senses. (1) Of a horse or a vehicle, the side facing the centre of the road when it is obeying the rule of the road; *e.g.*, in Great Britain, where traffic keeps to the left, the off-side is the right, the left being called the near-side. (2) In cricket, the side of the field towards which the batsman's body is turned when he is taking the strike, *i.e.* on the bowler's left for a right-handed batsman and *vice versa*. The other side of the field is called the leg or on-side. (3) The off-side rules in football and hockey are described in the articles on those games.

**Oflag.** Camp for officer prisoners of war in Germany during the Second Great War. The word is an abbreviation of *Offizierlager*, officers' camp.

**O'Flaherty, LIAM** (b. 1897). Irish writer. Born in the Isle of Aran, Aug. 28, 1897, and educated at Dublin university, he volunteered for the republican forces in 1913, but joined the British army at the outbreak of the First Great War. He returned to Eire in 1920, became a Communist, and went to London to devote himself to writing. Of his novels the best-

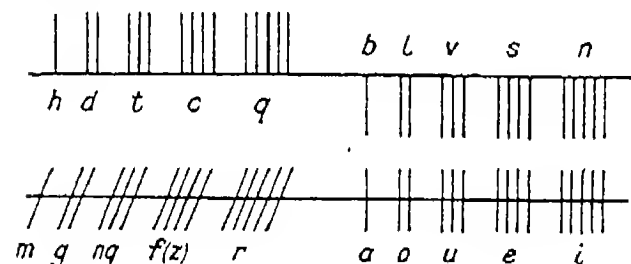


Liam O'Flaherty,  
Irish writer

known are *The Black Soul*, 1924; *The Informer*, 1925 (James Tait Black prize); *The Assassin*, 1928; *Skerret*, 1932; *Famine*, 1937; *Land*, 1946. He published a collected edition of his brilliant short stories in 1937. He also wrote a biography of Tim Healy, 1927, and a travel book, *I Went to Russia*, 1931.

**Offerdingen**, HEINRICH VON (c. 1170–1250). German minnesinger. Some writers have suggested that Offerdingen was the author of the *Nibelungenlied* (q.v.).

**Ogam** OR OGHAM. Primitive system of writing used for Celtic inscriptions in early Ireland and Britain. It was probably invented in S.W. Ireland in the 4th or 5th century A.D., and remained in use until the 10th century. Its inventors were familiar with the Latin alphabet. The Ogam alphabet consisted of 20 characters composed of straight incised lines or notches along and across a stem line, usually the edge of a stone; and the inscription was read upwards. A few additional characters were added later.



More than 350 inscriptions are known, some 300 from Ireland, about 30 from Scotland, Orkney, Shetland, and the Isle of Man. The remainder, many accompanied by Latin versions, come from Wales, Devon, and Cornwall, except for one from the Romano-British site of Silchester. Most of them are epitaphs, sometimes associated with Christian symbols. All are brief. The key to their decipherment was furnished by the bilingual texts and by the 14th-century MS. *Book of Ballymote*.

**Ogden**. City of Utah, U.S.A. The co. seat of Weber co., it stands 4,338 ft. in alt. at the junction of the Ogden and Weber rivers, 38 m. N. of Salt Lake City, and is served by the Union Pacific and other rlys. It dates from 1848, the Mormon church having paid \$2,000 to establish title to the surrounding region. Older

houses are former dwellings of Mormon families. A city since 1851, Ogden is the largest sheep and cattle shipping point in the west. Pop. 43,688.

**Ogdensburg**. City of New York, U.S.A., in St. Lawrence co. A port of entry, it stands on the St. Lawrence river, at its junction with the Oswegatchie, opposite Prescott, Ont. Its buildings include the U.S. government building, the R.C. cathedral, and the state hospital and armoury. A large lake shipping trade is carried on. Half the people are of French Canadian origin and hold an annual street gala at which they entertain Canadians. Settled in 1749, Ogdensburg was incorporated in 1817 and became a city in 1868. Pop. 16,346.

**Ogee**. Type of arch or section of architectural moulding of which the curve is an S-shape. It was used extensively in 14th century Gothic architecture. See Arch illus. (Decorated); Moulding illus.

**Ogier the Dane**. A hero of medieval romance, belonging to the Charlemagne cycle. Historically he represents the Frank Autchar, who conducted the widow of Charlemagne's brother, Carloman, to Desiderius, king of the Lombards, and joined him in his war against Charlemagne. His connexion with Denmark seems due to a mistake, though as Holger Danske he was adopted as a Danish national hero. Ogier is the subject of French and Italian romances, and of Spanish and Scandinavian tales.

**Ogive**. Name for a pointed arch, as used in Gothic architecture; also used in mathematics, through confusion with ogee (q.v.), to denote an S-like curve in a graph, e.g. the curve that represents cumulative frequency distribution in relation to size.

**Ogive**, OGOWE, OGOWAY, OGOWAI, OR OGOUO. River of French Equatorial Africa. It falls into the sea a few miles S. of Cape Lopez, and forms the principal coastal river between the Niger and the Congo. It is obstructed by numerous rapids, but is navigable as far as Njole, 160 m. from its mouth. Its length is 700 m.

**Oglethorpe**, JAMES EDWARD (1696–1785). English soldier and philanthropist. Born Dec. 21, 1696, he served under Prince Eugène, and entered parliament in 1722. His attention having been drawn to the sufferings of debtor prisoners, he formed an association for the establishment of a colony of released debtors, and in

1733 he settled Georgia, acting as governor there for 13 years. In 1745 he was sent against the Scottish rebels, and though acquitted on a charge of failing to overtake Prince Charles's army, he resigned his commission. He died July 1, 1785. See Georgia; consult Memoir, R. Wright, 1867.



James E. Oglethorpe,  
English soldier

**Oglio**. River of Italy, an affluent of the Po. It rises in the Alps in the neighbourhood of Mte. Adamello, and flows in its upper course through Val Camonica to the Lago d'Isèo. Issuing from the S. end of the lake, it crosses the plain of Lombardy by a curved course, receiving from the left the Mella and Chiese, to join the Po 10 m. S.W. of Mantua. Its total length is 130 m.

**Ogmore-by-Sea**. Part of the rural dist. of Penybont in the co. of Glamorgan, Wales. It is three m. from Bridgend, and has remains of a castle dating from Norman times. Near is Ewenny, with the ruins of a Benedictine abbey. Ogmore is also the name of a small river which flows into the Bristol Channel at Ogmore-by-Sea.

**Ogmore Vale**. Part of the urban dist. of Ogmore and Garw in the co. of Glamorgan, Wales. It is eight m. from Bridgend and has a rly. stn. It is a coal mining centre.

**Ogpu**. A former name of the political police organization established in the U.S.S.R. in Dec., 1917, under the name of Cheka. It was originally organized to deal with sabotage and counter-revolutionary manifestations, but as the internal difficulties of the early Communist regime increased, its activities were extended to embrace smuggling, speculation, and military and political counter-espionage. Eventually the Cheka was given authority to make summary arrests and judgements and to execute persons sentenced. Arrests were usually carried out at night and news of prisoners was rarely received until they had been either sentenced or freed. The name Cheka thus became one of terror, and no doubt the strength of the organization and the numbers of its victims were fantastically exaggerated.

In 1922 the Cheka was re-organized under the name Ogpu, a word formed from the initials of the Russian words for unified



political state administration. The OGPU retained great power and had a leading share in preparing the political trials of 1936-37 (see Moscow Trials). In 1936 the OGPU was incorporated in the commissariat for internal affairs and given charge of forced labour camps. Special detachments dealt with internal opposition, and served on the frontiers. Later, with the renaming of the political dept. controlling it, OGPU was named first the N.K.V.D., then the M.V.D. (abbreviation for ministry of the interior). The M.V.D. remains the instrument by which the decisions of the Politbureau are enforced within the U.S.S.R. It is said to be 600,000 strong, equipped like an army, and it includes many spies, informers, and agents-provocateurs.

**O'Grady**, STANDISH (1846-1928). Irish author. Born Sept. 18, 1846, he was educated at Trinity College, Dublin. His literary work marks the starting point of the modern Irish literary revival. His publications include *The History of Ireland, Heroic Period*, 1878; *The Coming of Cuculain*, 1894; *Chain of Gold*, 1895; *Ulrick the Ready*, 1896; *The Flight of the Eagle*, 1897. He died May 18, 1928.

**Ogygia**. In Greek mythology, the island upon which Odysseus spent eight years with the nymph Calypso. See Calypso; Odyssey.

**O'Higgins**. Inland prov. of central Chile. Named after Bernardo O'Higgins (*v.i.*), it is bounded N. by Santiago and S. by Colchagua. The E. portion is traversed by the Andes, the surface sloping W. to the fertile valley of Chile. The N. boundary is partly traced by the river Maipo, while the Rapel flows along its S. frontier. The chief products are wheat, wine, and fruit, and cattle-rearing and gold-mining are carried on. The capital is Rancagua, 40 m. by rly. S. of Santiago. Area, 2,745 sq. m. Pop. 200,297.

**O'Higgins**, AMBROSIO (c. 1720-1801). S. American administrator and soldier. Of humble parentage, he was sent from Ireland to his uncle, a Jesuit in Seville, who, finding him unsuited for the Church, sent him to S. America, where he became a pedlar, and made his way across the Andes to Lima, where he kept a stall and

trafficked in mules. He eventually obtained a govt. contract to build rest-houses on the mountain roads.

In 1770 O'Higgins was sent to suppress a rising of the Araucanian Indians, whom he defeated, but he won their good will after peace was concluded. In 1788 he became captain-governor of Chile with the title of marquis of Osorno. He governed with an iron hand, repaired roads, encouraged trade, and checked official corruption. Promoted viceroy of Peru in 1796, he thus became the king of Spain's representative in S. America. O'Higgins was the first and greatest of the many Irish who acquired



Bernardo O'Higgins, 1778, became Chilean dictator commander-in-chief (1813) and dictator (1817-23) of Chile, and declared its independence in 1818. He died Oct. 24, 1842.

**O'Higgins**, KEVIN CHRISTOPHER (1892-1927). Irish politician. He was born at Stradbally, June 7, 1892, the son of Dr. T. Higgins, who was assassinated, 1923. Educated at S. Peter's College, Carlow, he was articled to a solicitor, his uncle, M. Healy of Cork. He took part in the Easter rebellion, 1916, and while in prison was elected Sinn Féin M.P. for Queen's co. In the Cosgrave government of 1922 he was minister of Justice and vice-president of the executive council; he established the civic guard and had rebels executed. On July 10, 1927, he was murdered by three assailants near Bookstown, while on his way to Mass.

**Ohio**. River of the U.S.A. Commercially the most important, and, next to the Missouri, the largest tributary of the Mississippi river, the Ohio is formed by the union of the Monongahela and the Allegheny rivers at Pittsburgh. It flows generally S.W. for 975 m., joins the Mississippi at Cairo, and during its course separates West Virginia and Kentucky from Ohio, Indiana, and Illinois. It has a breadth varying from rather less than  $\frac{1}{2}$  m. to a little more than  $\frac{3}{4}$  m., and drains an area exceeding 200,000 sq. m. Among its principal affluents are the Tennessee, Cumberland, Wabash, Kentucky, Kanawha, and Big Sandy. In addition

to Pittsburg and Cairo, the towns standing on its banks are Cincinnati, Paducah, Marietta, Louisville, Evansville, and Mount Vernon.

The Ohio, except for a short distance at Louisville, where there is a fall of 26 ft. in 2 m., is navigable for large vessels throughout its length, although delay is caused during drought periods by the low level of the water, and at other times by flood. A canal with locks was constructed to overcome the obstruction caused by the falls.

**Ohio**. North-central state of the U.S.A. Its area is 41,222 sq. m., or nearly one-third larger than Scotland. Though 34th in size of the U.S., it is the 5th in pop. The state is crossed from N.E. to S.W. by a low hill ridge, whence the surface slopes to Lake Erie in the N. and to the Ohio river in the S. The Maumee, flowing into Lake Erie, is the chief northern river; the S. part of the state is watered by many affluents of the Ohio, which have cut deep valleys through the sandstone rocks.

Ohio produces large quantities of maize, wheat, and oats, besides tobacco, hay, potatoes, fruit, etc.; stock-raising is a valuable interest. The coalfields comprise an area of nearly 12,000 sq. m., and natural gas, petroleum, limestone, and other minerals are obtained. The important manufactures include iron and steel products, flour, and rubbergoods. The State, Ohio, Cincinnati, and Miami universities are among higher educational institutions. Besides the lake, river, and canal facilities, 9,121 m. of rlys. are available for transport. Two senators and 23 representatives are sent to congress. Columbus is the capital and Cleveland and Cincinnati the largest cities. Ohio applied for admission to the Union in 1803, but owing to an oversight the resolution admitting it was passed only in 1953; Ohio had meanwhile provided six presidents. Pop. (1950) 7,946,627.

**Ohlau** (Pol. Olawa). Town of Lower Silesia at the confluence of the Ohle and the Oder, 16 m. S.E. of Breslau (Wroclaw). Buildings include a 16th cent. castle and several churches. It trades in tobacco and has lime kilns and machinery factories. Ohlau was made a town in 1290 and was at one time a residence of the Sobieski family. It became Prussian with the rest of the Silesian duchies in 1742. It was occupied by Poland after the Second Great War.

**Ohm**. Unit of electrical resistance. The resistance of a circuit is

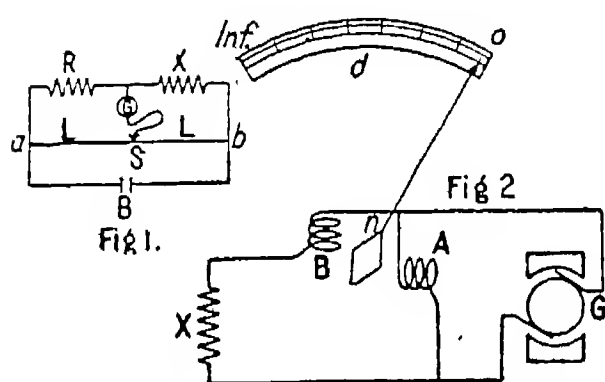


Ambrosio O'Higgins, S. American administrator

1 ohm when a pressure of 1 volt is required to cause a current-flow of lampere. See International Units.

**Ohm**, GEORG SIMON (1787-1854). German physicist. He was born at Erlangen, March 16, 1787, and educated there. After holding a series of academic posts, he became in 1852 professor of experimental physics at Munich, but is chiefly remembered as the discoverer, in 1827, of Ohm's Law (*q.v.*). He died July 7, 1854.

**Ohmmeter.** Instrument for measuring the electrical resistance of conductors in ohms or of insulation in megohms. In one type, known as the Wheatstone bridge, comparison is made of a known resistance with the resistance to be measured. Its simplest form is shown in the diagram (Fig. 1) and



Ohmmeter. Diagrams illustrating types of instruments for measuring electrical resistance. See text

consists of a wire L of uniform resistance and one metre in length. To its two extremities (*a* and *b*) are connected a coil of known resistance *R* and the unknown resistance *X* in series. A battery *B* sends a current through the two circuits in parallel, while a galvanometer *G* is joined at a point between the two resistances and to a sliding contact *S* on the wire *L*. Current will then flow through both *R* and *X* in series and through the slide wire *L*. The sliding contact is adjusted until there is no deflection of the galvanometer needle. When this happens the circuit through *R* is equal in resistance to *aS* while the circuit through *X* is equal to *Sb*. No current can flow through *G*; there will be no deflection of the galvanometer needle. As the slide wire *L* can be scaled in centimetres and millimetres, proportions of *aS* and *Sb* are easily ascertained. The resistance  $X = R \times aS/Sb$ .

In another type of instrument, (Fig. 2), a magnetic needle *n* is subjected to the influence of two coils *A* and *B*, arranged at right angles to one another. Each coil, when current passes through it, tries to turn the needle into a line parallel to its own axis. A mag-

neto generator *G* supplies current to the instrument and is connected by coil *A* and also by coil *B* in series to the resistance *X* under test. Assuming *X* to offer infinitely great resistance, all the current will pass through *A*, and the pointer attached to the needle will move into the infinity position at one end of the scale of the dial. If, however, any current passes through *X*, coil *B* acts in opposition to *A*, and the deflection of the pointer is modified accordingly. The graduation of the dial scale is based upon tests made with calibrated resistances.

**Ohm's Law.** A relationship in electricity first investigated by G. S. Ohm (*q.v.*), who found that the ratio of the (direct) current, *I*, to the e.m.f., *E*, in any circuit is proportional to the total resistance, *R*, of the circuit (including the internal resistance of the cell, etc.); i.e.

$$E/I = R; I = E/R; E = IR.$$

If *E* is in volts and *I* in amperes, *R* will be in ohms.

**Ohre.** River of Czechoslovakia described under its more familiar German name, Eger.

**Ohthere** (fl. 880). Norse navigator. He entered the service of Alfred the Great, who described two of his voyages in his translation of Orosius. Ohthere sailed round the North Cape, explored the Murman coast, and discovered the White Sea.

**Oich, Loch.** Lake of Inverness-shire, Scotland. It is 4 m. long and about  $\frac{1}{4}$  m. broad, and is the summit level (105 ft.) of the Caledonian Canal. It has a depth of 155 ft., and fills part of the Great Glen. The Glengarry flows into the loch, which is drained by the Oich (6 $\frac{1}{2}$  m. long) into Loch Ness at Fort Augustus. Trout and salmon are plentiful.

**Oil.** Organic liquid of definite composition or origin. By definition and general acceptance so-called oily liquids such as sulphuric acid (oil of vitriol) are excluded. There are two large groups of oils: those obtained from animals and plants, and those of mineral origin; although it can be argued that the genesis of all oil is ultimately animal or vegetable since that is the source of coal, petroleum, shale, etc., from which mineral oils are derived. Oils of relatively simple composition can be synthesised in the laboratory and some of them also on an industrial scale.

Oils obtained directly from animals and plants are of two types. Fixed (fatty, non-volatile) oils

come from the cells of the organism. They are triglycerides, and can be distinguished from other oils because with suitable treatment they will yield glycerine. To these may be added substances such as sperm oil which, strictly a liquid wax, is a typical oil in appearance and commonly classed with the fixed oils. Although such waxes are esters they are not glycerides, the alcohols being monohydric and, to some extent, dihydric. Essential (volatile) oils are contained mainly in the leaves, stems, and flowers of plants. They all have characteristic odours—peppermint, lavender, turpentine, etc.—and are obtained by distillation with steam. They differ completely in composition from the fixed oils, containing terpenes, camphors, olefinic terpenes, and olefinic camphors.

Mineral oils are complex mixtures of hydrocarbons with varying amounts of oxygen, nitrogen, and sulphur compounds. There are three main groups: petroleum (crude oil), shale oil, and coal tar. Crude oil does not contain unsaturated hydrocarbons; it is a mixture of paraffins, naphthenes, and aromatics. Shale oil, produced by the destructive distillation of the organic matter in oil shale, contains important quantities of olefines. Coal tar, in addition to a high aromatic content, has an appreciable amount of phenols and some nitrogen compounds such as pyridine. Unlike the fixed and essential oils, mineral oils are not generally of much use as they are obtained, but must be divided into fractions of more limited range. Petroleum is split into gasoline, kerosine, gas oil, lubricating oil, fuel oil, etc. Shale oil gives a similar range, while coal tar gives benzols, solvent naphtha, naphthalene, cresols, creosote oil, etc. Differentiation between the products of petroleum and shale oil is difficult, frequently impossible, but those from coal tar can readily be separated.

This classification of oils gives an impression of definite boundaries between the major groups; but some crossing is possible. Thus, from the resin tapped from various species of conifers, turpentine is distilled, leaving a residue of rosin. On dry distillation of the rosin, hydrocarbon oils are obtained which are not readily distinguished from mineral oils. Similarly with the uses to which the various groups of oils are put. Fixed oils are used for foods, soaps, lubricants, paints, etc.;



essential oils for perfumery, varnishes, paints, solvents, etc.; and mineral oils for fuels, solvents, lubricants, as insulation for oil-filled power cables, etc. See Essential Oils; Fats; Fixed Oils; Fuel Oil; Petroleum; Waxes; also Cetane Number; Cracking; Flash Point; Fractionation; Octane Number; Refinery.

**Oil Beetle.** Insects of the family Meloidae, which include nine British species. Those of the genus *Meloe* are commonly named oil beetles from the fact that an oily fluid exudes from the joints of their legs and probably serves the purpose of making them distasteful to their enemies. Large in size, with short wing covers and a long abdomen, these beetles inhabit grassy places, where they lay eggs. The larvae attach themselves to bees and get carried to nests, living as parasites. The Spanish fly (*Lytta vesicatoria*), which yields the drug cantharidin, also belongs to the Meloidae. See Cantharides.

**Oilcake.** The term originally applied to linseed cake. It is now used also for other kinds of cake rich in oil. See Earth-nut Cake; Linseed Cake; Palm-nut Cake; Rape Cake.

**Oil City.** City of Pennsylvania, U.S.A., in Venango co. It stands on the Allegheny river, 130 m. by rly. N. by E. of Pittsburgh, and is served by the Pennsylvania and other rlys. Its buildings include the city hospital and the Standard Oil co.'s building. Situated in the Pennsylvania oil region, it is concerned chiefly with the refining of bases for lubricating oil. Settled in 1825, Oil City was incorporated in 1863 and chartered as a city in 1871. Oil was first discovered in the locality in 1859, and between 1860 and 1870 it was the centre of American oil production. After 1870 it continued to supply crude oil which was unobtainable elsewhere. Pop. (1950) 19,581.

**Oilcloth.** A name sometimes used to describe floorcloth (*q.v.*). Table oilcloth, Lancaster cloth, or American cloth consists of a cotton grey cloth coated on one side with a flexible film of several thicknesses of oil paint. It is used for table, shelf, and wall covering. The cloth is prepared for coating by sizing, stentering, and rubbing. The under-surface may be raised to produce a soft back. Paint is applied in spread-

ing machines, the surface is usually printed with a pattern, and a protective coating of varnish or lacquer is finally applied.

**Oil-Drop Experiment.** Method of determining the charge of an electron. Devised by the U.S. physicist R. A. Millikan (*q.v.*), it consists of holding an oil-drop of suitable size between two parallel metal plates maintained at a constant electrical potential difference. If  $ne$  represents the charge on the drop,  $e$  being the electronic charge and  $n$  a number to be found, then 
$$ne \frac{V}{d} = mg, \text{ where } V$$



Oil Beetle. *Meloe violacea* (male)

represents the value of the potential difference which maintains the drop in balance,  $d$  is the distance between the plates,  $g$  is the acceleration due to gravity, and  $m$  is the mass of the drop. The last quantity is determined by timing the rate of fall of the drop under gravity without an electric field, and by applying Stokes's law, the viscosity of the air being known. If  $n$  is not too large, it is easily deduced from an inspection of the values of  $ne$  for a number of differently charged drops.

**Oil Engine.** Name formerly given to a type of internal combustion engine using paraffin (or kerosene) as fuel; whereas a gas engine uses coal gas or producer gas. The paraffin was converted into vapour in an externally heated vaporiser, mixed with air, and drawn into the cylinder on the induction stroke, thereafter operating as in a gas engine. The vaporiser was heated by a separate burner for starting, the heat of the exhaust gases being used for this afterwards. Except for small engines for outboard motors, etc., the advent of reliable compression ignition engines has rendered paraffin engines obsolete. Much higher mean effective pressure is practicable with the former type and its fuel consumption is lower. See Diesel Engine; Internal Combustion Engine.

**Oilfield.** Area in which oil is being produced from natural subterranean reservoirs. Its characteristic surface feature is the tall derrick, used for drilling wells, the number and spacing of which depend upon the depth, geological structure, and fluid conditions in the reservoir. Sand and sandstone reservoirs generally

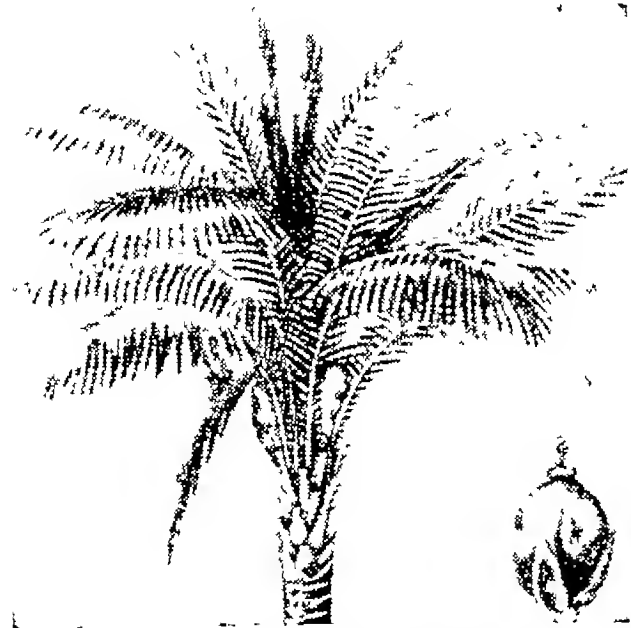
require relatively close spacing, whereas efficient production from many limestones is possible with the wells far apart; in the sandstone reservoirs of the W. hemisphere wells do not usually occupy more than 50 acres each, but in the limestones of Iran there is only one well per 500 to 1,000 acres. The surface equipment of an oil-field consists of drilling rigs and derricks; separators; of pipe lines, pumps, and tanks; pumping and gas-lift equipment for raising oil when the reservoir pressure is insufficient; workshops, stores, offices, laboratories, and accommodation for the staff, which in undeveloped country may amount to the pop. of a town.

**Oil Gas.** Gas obtained by the cracking of gas oil and used for heating and lighting. The first patent for manufacture of gas from vegetable or animal oil, fat, bitumen, or resin was granted in England to Taylor in 1815, but the best-known process, which involved cracking gas oil in retorts at high temperatures, was developed by Pintsch in Germany in 1870. Production of oil gas is now largely limited to the Pacific coast region of the U.S.A., where the cost of solid fuels is high and petroleum is abundant. A fire-brick-lined steel shell, filled with checker brick, is heated by oil burners to about 2,000° F.; air is blown in to burn off carbon deposited in an earlier cycle; and oil, atomised by steam, follows. The oil cracks as it passes through the hot brick, forming oil gas and free carbon, and the steam reacts with part of the carbon to give water gas. Six or seven gallons of oil make 1,000 cu. ft. of gas of calorific value 550 B.Th.U. per cu. ft. See Cracking.

**Oil Painters, ROYAL INSTITUTE OF.** British society of artists founded in 1883. It became a royal society in 1909, and holds annual exhibitions (open to non-members) at the Royal Institute Galleries, 195, Piccadilly, London, W.1. Members are entitled to the letters R.O.I.

**Oil Palm (*Elaeis guineensis*).** A tree of the family Palmae, native of W. Africa, but much grown in the W. hemisphere. It grows to a height of about 30 ft., with a stout stem bearing at its extremity a crown of magnificent feather-like leaves, 15 ft. long. The male and female flowers are borne usually by separate trees, but sometimes on the same tree. Bright red fruits, which yield palm oil, form large, oval heads. This oil is

obtained principally from the external fleshy coat, by boiling the fruits in water, and skimming the



Oil Palm. Crown of feather-like foliage. Inset, part of fruit head

orange-red, butter-like fat off the surface. The seed, enclosed in a hard shell, also yields oil under pressure. The latter is used as a lubricant and in making margarine.

**Oil Rivers Protectorate.** Name formerly applied to the coastal districts in the estuary of the Niger. In 1885 the Berlin conference acknowledged that a British protectorate had been virtually established over these regions, and an order in council defined the boundaries of the territory. The British commissioner was stationed at Old Calabar. In 1893 the Oil Rivers protectorate became part of the Niger Coast protectorate, afterwards S. Nigeria. See Nigeria.

**Oil Shale.** Shale which contains organic matter insoluble in normal solvents of oil but which, on retorting, produces oil. The organic matter is called kerogen (*q.v.*). The term oil shale is frequently applied to varieties of rock which on heating produce an oil or tar in addition to the true oil shale, *e.g.*, kukersite, torbanite, boghead coal, cannel coal. Commercial exploitation of oil shale and similar rocks was started by Young in Midlothian, Scotland, in 1851, but as the production of petroleum from wells increased rapidly in the 20th century, the oil shale industry had a hard struggle to survive. It is continued in Scotland, Estonia, S. Africa, France, Manchuria, and Sweden, where there is no indigenous crude oil. There are deposits in England (Dorset and Norfolk), but their oil is too sulphurous to use. The U.S.A. has vast reserves, while in the U.S.S.R. the production of shale oil is said to be proceeding apace.

After mining by normal open-cast or underground methods, the

oil shale is heated in retorts—directly or indirectly heated, vertical or horizontal, rotary, tunnel, or stationary. The shale may be merely heated, or steam and air may be passed through it during heating, and it will give shale oil, combustible gases, carbon, and ammonia. Oil recovery varies from 20 to 100 gallons or more per ton of rock, the lower figure being representative of Scottish yields. Crude shale oil from the retorts is treated much as crude petroleum is.

Mining costs are a major item adversely affecting the use of oil shale. In Sweden a process invented by Ljungstrom aims at avoiding these by heating the shale *in situ*. Heating is by electricity through elements carried in 2-in. boreholes, so the method depends on cheap electric power. In Germany attempts have been made to distil Württemberg oil shale *in situ* by adapting the Russian process for the underground gasification of coal. *Consult* Oil Shale and Cannel Coal. Institute of Petroleum, 1938.

**Ointment.** Preparation consisting of an active drug mixed with a fatty substance, intended to be applied to an external surface. The substances most frequently used as the basis of an ointment are lard, olive oil, wax, paraffin, and hydrous wool fat (lanolin).

**Oirot, OYROT, OR OURAT.** Tribe of Asiatic Russia, one of the Altai group of peoples. They live in the Altai mts., close to the Chinese border, and from 1932 gave their name to the autonomous region renamed Gorno-Altai in 1948. The capital of the region, a town on the river Katunya (or Katun) 250 m. S.E. of Novosibirsk, called formerly Ulala, had its name changed in 1948 from Oirot-Yula to Gorno-Altai.

**Oise.** Department of France, in the N. of the country. Before the French Revolution parts of it were in the old provinces of Normandy, Picardy, and Île de France. The surface is hilly, and across the dept. flows the Oise. Other rivers are the Aisne, Brèche, Nonette, and Ourcq. The soil is fertile; wheat and other cereals are grown, cattle are reared, and there are many dairy farms. Here are the forests of Chantilly and Compiègne. The chief town is Beauvais; others are Chantilly, Noyon, Clermont, Compiègne, Creil, and Senlis. Partly overrun by the Germans in Aug.–Sept., 1914, and again in June–Oct., 1918, the dept. saw furious fighting

during the First Great War. Area 2,272 sq. m. Pop. (1954) 435,308.

**Oise.** River of France. Rising near Chimay, in the Ardennes, in Belgium, it enters France, and after flowing past Guise receives the waters of the Serre and the Ailette. Near Compiègne the Aisne flows into it; other tributaries are the Thérain and the Brèche. It falls into the Seine, 40 m. below Paris, after a course of 186 m. For about 60 m. the river is canalised and linked up by canals with the waterways of Belgium and N. France.

The battle of the Oise, in the First Great War, began Aug. 16, 1918. It was opened by the French by heavy bombardment and patrol encounters between the Aisne and Oise on a front of 20 m. In the infantry attack, Gen. Mangin took 13,000 prisoners and 300 guns. When the Germans invaded France in 1940, their armoured formations crossed the Oise on May 17. This endangered British communications and compelled the British Expeditionary Force to withdraw behind the Scheldt.

**Ojibwa.** Spelling sometimes used for Chippewa (*q.v.*), the name of a North American Indian tribe of Algonquin stock.

**Ojos del Salado.** Mountain of the Andes, in Chile, about 280 miles south-east of Antofagasta. A Chilean army expedition in 1956 found it to be at least 23,293 ft., and the highest peak in the western hemisphere.

**Oka.** River of central Russia. It rises near Ochka, in the region of Kursk, and flowing alternately N. and W. for 950 m., discharges itself into the Volga at Gorky. It connects the industrial and grain-producing districts of the country, and is nearly everywhere navigable.

**Okanagan.** River of Canada, in British Columbia, affluent to the Columbia river. With its numerous tributaries it drains the W. slopes of the S. Monashee Mts. and the Gold Range, which separate its basin from that of the Kootenay and Upper Columbia. Its upper valley is filled mainly by the narrow Okanagan Lake, 80 m. long; thence it flows S. through smaller lakes into the U.S.A., to join the Columbia river at Brewster.

**Okapi** (*Ocapia johnstoni*). Ruminant mammal related to the giraffe. First discovered by Sir Harry Johnston, in 1900, in the Semliki forest of Central Africa, though supposed to have been seen by Stanley some years earlier, it is about as large as a mule, and the general colour of the pelt is blackish brown, with yellow legs striped





Okapi. Specimen of this Central African ruminant

By courtesy of Dr. Michel L'Hoest, of the Royal Zoological Society, Antwerp

horizontally with black. The neck is long in proportion to the body, and the head is giraffe-like, with large, upstanding ears. The male has two short pedicles of bone arising from the head, like the so-called horns of the giraffe. The okapi lives in the densest parts of the forest, and appears to go in small herds.

**Okayama.** Town of Japan, in Honshu. Situated 240 m. by rly. E.N.E. of Shimonoseki, on the route to Kobe, it stands on a wide alluvial plain in the lower course of the Asahi river, 7 m. from its mouth. Branch rlys. run to Uno, Tatai, and Tsuyama, the Uno line providing connexion with Shikoku. The castle is in ruins, the park, one of the most beautiful in the country, extends over 22 acres, and there are three Buddhist temples. Cotton and silk yarns, cotton goods, and rice have been produced. Pop. (1955 est.) 233,138.

**Okeechobee.** Lake of Florida, U.S.A. The largest lake in the S. portion of the U.S.A., it borders the Everglades on the S., and is 40 m. long by 28 m. broad, its area being about 730 sq. m. Canals link it up with the Caloosahatchee river. Drainage was begun in 1881, and excess water is taken off to the Atlantic and the Gulf of Mexico.

**Okehampton.** Bor. and market town of Devon. England, 20 m. W. of Exeter. It is on the N.W. edge of Dartmoor, where the rivers East and West Okement meet. The church of All Saints, except for its 15th-century tower, was rebuilt in 1842, after a fire; there are remains of a castle mentioned

in Domesday, including parts of the chapel and banqueting hall and a Norman keep. Okehampton was a bor. before 1086. It sent two members to parliament until 1832. Outside the town are artillery ranges. Market, Sat. Pop. (1951) 3,899.

**O'Kelly, SEAN THOMAS** (b. 1882). President of the Irish Republic. Born in Dublin, Aug. 25, 1882, and educated at the O'Connell schools there, he was an assistant in the national library of Ireland, and a journalist. In 1905 he assisted Arthur Griffith (*q.v.*) in founding the Sinn Féin movement, being secretary 1908-10. During the rising of Easter, 1916, he fought in the G.P.O., Dublin; he was imprisoned for this, but released after a year. In 1918 he was returned as Sinn Féin M.P. for College Green, and soon became a Dublin alderman. In the first (illegal) Dáil of 1919 he was chosen speaker, and he went to the Versailles conference, and later as Republican envoy to Rome. After the establishment of the Irish Free State in 1921 he retired into the political wilderness. When Eamon de Valera came to power in 1932, O'Kelly was made vice-president of the executive council, attending the League assembly at Geneva and the imperial economic conference at Ottawa. During 1932-39 he was minister for local government and public health, and in 1938 was made vice-premier. From 1939 he was minister of finance, until on June 25, 1945, he succeeded Douglas Hyde in the presidency; he was re-elected 1952.

**Okhotsk, SEA OF.** Gulf in the Pacific Ocean. It is bordered by the peninsula of Kamchatka, Asiatic Russia, Sakhalin, Yezo, and the Kurile Islands. It is 1,535 m. long and 795 m. broad. On the N. shore is the small town of Okhotsk, in the region of Kamchatka.

**Oki Islands.** Archipelago of Japan, in the Japan Sea, W. of Honshu. The group is 44 m. from Sakai, on the mainland, with which a ferry service has been maintained from Saigo, the administrative centre for the islands. Area 135 sq. m.

**Okinawa.** Island in the Pacific Ocean. The largest island of the Riukiu group, it is long, narrow, and irregular, with constricted waists of land and rugged peninsulas projecting E. and W. into the sea. Approximately 65 m. long from N. to S., it has a maximum width of 10 m., and an area of 485 sq. m. Some 325 m. from the Japanese mainland, it was a

prefecture of the Japanese empire until its capture by the U.S.A. in the Second Great War.

Okinawa had been developed by the Japanese as an air base, and fighter aircraft from the island offered serious opposition to U.S. bombers from the Marianas attacking industrial centres in Japan. Possession of Okinawa, with its good anchorages, was essential to the U.S.A. for the building up of forces for the final assault on the Japanese mainland. With the capture of Iwojima on March 26, 1945, Okinawa remained as the final stepping stone for the Allies to cross in the Pacific. Garrisoning the island with 60,000 troops, the Japanese had made elaborate preparations for the impending attack. Caves were turned into strongpoints, warships and aircraft assembled, while piloted flying bombs, suicide swimmers and boatmen, and mortars throwing 1,000-lb. projectiles were used for the first time.

Preceded by a devastating naval bombardment, the U.S. 10th army, commanded by Gen. Buckner and consisting of one corps of four army divisions and a corps of two marine divisions, went ashore near Yontan on Easter Sunday, April 1. A feint had deceived the Japanese as to the actual point of attack, and opposition was slight. By the end of the day the Americans had secured two airfields and advanced 3 m. On the 2nd their marines forced a corridor across the island and cut the defences in two. As the Americans had immense superiority in men and materials, resistance should have collapsed. But the American command made a serious tactical error in assuming that the Japanese would withdraw N. to take advantage of natural defences. Even when it became evident that they had concentrated in the S., Buckner committed his marine corps to an unnecessary mopping-up operation towards the N., while he wheeled the 24th army corps against the main enemy force. The wheel was carried out so slowly that the Japanese had sufficient time for improvement of the defences.

Thereafter the Americans continued to advance slowly and at heavy cost. The enemy had dug themselves into caves and along high ridges; the campaign became a series of hand-to-hand encounters over the most elaborate system of concealed fortifications yet encountered in the Pacific war. The Japanese navy and air force car-

ried out devastating attacks on the beaches and ships, while suicide pilots were brought into action against merchant vessels. Out of an invasion fleet of over 1,000 ships the U.S.A. lost approximately 100 sunk or seriously damaged. Buckner withdrew his marine corps from the N., but instead of landing it in the rear of the enemy, he placed it on the right flank, so that two army corps were crowded on a front of 8 m. Gradually, however, the weight of men and materials told in favour of the invaders, until the Japanese, fighting stubbornly to the end, were reduced to shattered remnants. With the breakthrough beyond Yonabara, the campaign became a mopping-up operation, and the American flag was hoisted over Okinawa on June 21, four days after the death of Buckner in action.

Estimated to last 40 days, the campaign on Okinawa had taken 82, and cost the U.S.A. 47,000 casualties, of whom 12,000 were killed and missing. Of the Japanese garrison of 60,000, only a few hundreds survived to be taken prisoner. American casualties shocked the people and drew adverse criticism, but military commentators justified the losses when balanced by the gains. Occupation of Okinawa enabled the U.S. air force to intensify its attacks on the Japanese mainland, while the loss of 4,000 of their aircraft by the Japanese over the island was a crippling blow to them. Okinawa remained a U.S. military base after the war.

In Oct., 1945, the island was struck by a typhoon that caused much material damage and heavy casualties among the inhabitants.

**Oklahoma.** State of U.S.A. One of the west south central states, it lies between Texas and Kansas, west of Arkansas. Part of the great basin of the Mississippi, it is a rolling plain varying in elevation between 1,000 and 2,500 ft., rising gradually from E. to W.; in the extreme N.W. it reaches 5,000 ft. The Wichita mts., in the W., rise to about 2,500 ft. The Ozark mts., in the E., are heavily wooded, but the plains are almost treeless, and are scarred by cañons cut by the rivers. Much of the state is arid, and the rivers, of which the chief are the Arkansas, Cimarron, Canadian, and Red, are frequently waterless during hot summers. To the N.W. lie the Great Salt Plains, a flat area 6 m. by 8 m., covered with a deposit of salt. Minerals include zinc, lead,

and natural gas, but the chief product is petroleum. Wheatfields adjoin the oilfields, and other important crops include broom, corn, cotton, maize, and oats. There are over 6,000 miles of rly.

Part of their territory was ceded by the Indians to the U.S.A. in 1866; from 1889 to 1903 various sections were laid open for white settlers. Oklahoma Territory was created as an administrative unit in 1890, and became a state in 1907. The capital city is Oklahoma (*v.i.*). The state sends two senators and six representatives to congress. Area 69,919 sq. m. The population in 1950 was 2,233,351, of whom 53,769 were American Indians.

Oklahoma was the title of a musical show by R. Rodgers and O. Hammerstein, produced in New York in 1943, where it ran until 1948. Produced at Drury Lane, 1947, it ran there until 1950.

**Oklahoma.** City of Oklahoma, U.S.A., the state capital and seat of Oklahoma co. It stands on the North Fork of the Canadian river, 31 m. S.S.W. of Guthrie, and is served by various rlys. Prominent buildings are the Capitol and Epworth university. There is a large trade in cattle, fruit, cereals, cotton, oil. Pop. (1950) 243,504.

**Olaf I** TRYGVESSÖN (c. 960–1000). King of Norway, 995–1000. He had made expeditions to England, and even perhaps as far as Italy, when he returned to Norway, overcame Haakon Jarl, and secured his throne. Having become a Christian in England, he sought to make his people Christians also, founding a bishopric at Nidaros or Trondhjem, and building the first Norwegian churches. In 1000 he was attacked by the sons of Haakon Jarl, aided by the kings of Denmark and Sweden. Defeated at Svoldr, Olaf leaped into the sea and was drowned.

**Olaf II** (995–1030). King of Norway, 1015–30, and saint. He was a descendant of Harold Fair-Hair, and during his years of seafaring, in which he is said to have captured London on behalf of Ethelred the Unready, he was converted to Christianity in England. When he became ruler of Norway, which he made into one kingdom, he spread the faith with insistent severity. The pagan rulers, having banded together, called Canute of Denmark to their aid, and Olaf fled to Russia, 1028; but he returned and fell in battle at Stiklestad, July 29, 1030. He was canonised in 1164, and recognized as Norway's patron saint.

**Olaf VI** (b. 1903). King of Norway. Born July 2, 1903, son of Carl of Denmark (afterwards Haakon VII) and Maud, sister of George V, he was baptized Alexander Eduard Christian Frederik. He was given the name Olaf when, in 1905, his father accepted the throne of Norway and took the name Haakon. After leaving the Norwegian military academy he studied for two years at Balliol College, Oxford. On March 21, 1929, he married Princess Martha of Sweden (1901–54). He accompanied his father and the Norwegian govt. to England in 1940. C-in-c. of Norwegian armed forces from 1944. Olaf was the first member of his family to return to Oslo after its liberation, May, 1945. He succeeded to the throne on Sept. 21, 1957.



Olaf VI,  
King of Norway

**Oland.** Island off the S.E. coast of Sweden. Separated from the mainland by Kalmar Sound, it is 88 m. long and 5 m. to 10 m. broad. Chalk, alum, and sandstone are exported; the chief occupation is fishing. Borgholm on the W. coast is the chief town. Pop. 40,000.

**Old Age Pension.** See under the heading Pensions.

**Old Bailey.** London thoroughfare. It runs S. from Newgate Street to Ludgate Hill, E.C. At its N.E. corner is the Central Criminal Court (*q.v.*), on land occupied by old Newgate (*q.v.*) prison, opposite which were set up the pillory, whipping post, and gallows. There was a prison here in the 12th century. A mansion of the Sidneys stood in the Old Bailey. Camden was born in this thoroughfare, William Hone and Jonathan Wild lived in Ship's Court, and Goldsmith in Green Arbour Court. The Old Roman Wall extended along the E. side. The name is derived from the old court of the city chamberlain, or from the *ballium* or outer space near Ludgate.

**Oldbury.** Borough and market town of Worcestershire, England. It is 5 m. W. of Birmingham, on the rly. and the Birmingham canal. On the coalfield of the Black Country, it has steel works, iron foundries; makes nails, tools, chemicals. Pop. (1951) 53,887.

**Oldcastle, SIR JOHN** (d. 1417). English Lollard, called Lord Cobham after his marriage to the heiress to that title. He is first



mentioned as serving in the Welsh marches in 1401. In 1409 he married Lady Cobham, of Cooling,



Sir John Oldcastle,  
English Lollard

Kent, and was summoned to parliament as a baron. He was in the favour of the prince of Wales, afterwards Henry V. But in 1413 he was charged with heresy, arrested, tried, and sentenced to death. Escaping from the Tower, he engaged in a Lollard conspiracy, many leaders of which were arrested. Oldcastle remained in hiding until 1417, when he was captured, taken to London, and hanged Dec. 14. Some have supposed him to be in part the original of Shakespeare's Falstaff.

**Old Catholics.** R.C. congregations, chiefly in Germany, the Netherlands, and Switzerland, which have separated from the Church of Rome. The movement originated in a conference at Munich in 1863 attended by about a hundred scholars and priests whose purpose was to promote unity in religious and scientific thought among German R.C. divines. They vigorously opposed the dogma of papal infallibility proclaimed in 1870, on the grounds that papal infallibility was contrary to Scripture and tradition, condemned by previous councils, based upon non-authentic authorities, and incompatible with civil order; and at a congress which met at Munich in Sept., 1871, issued a manifesto asserting adherence to Catholic doctrine, and to the ancient constitution of the Church, repudiating papal infallibility, and declaring a desire to reform the Church and bring about reunion with the Oriental and other episcopal churches. Old Catholic churches were opened in various towns in Germany and Switzerland.

A second congress at Cologne in Sept., 1872, was attended by about 500 deputies, among them the archbishop of Utrecht, bishops of the Anglican and American Churches, and a representative of the Russian Church. The first bishop of the Old Catholics, Dr. Reinkens, was consecrated in 1873, according to the Roman rite, by the Jansenist bishop of Deventer. J. J. von Döllinger (*q.v.*) supported the Old Catholics.

**Old Contemptibles.** Nick-name for men of the B.E.F. of 1914. See Contemptibles, Old.

**Old Cocks' Race.** Popular name for the Royal Automobile Club emancipation rally, an annual run from London to Brighton for veteran motor cars which commemorates the abolition in 1896 of the 2 m.p.h. speed limit: up to that date motor vehicles had to be preceded by a walker carrying a red flag. The event, suspended during the Second Great War, was revived in 1946. It takes place on a Sunday during the month of November.

**Old Curiosity Shop.** THE. Charles Dickens's third novel, begun in the fourth issue of *Master Humphrey's Clock* (*q.v.*), April, 1840, and concluded in the number for Jan. 17, 1841. The illustrations were by George Cattermole and Phiz. The theme of the story is an old man's affection for his granddaughter, Little Nell, and their wanderings together through the countryside. Daniel Quilp, Dick Swiveller, and Mrs. Jarley are among the other characters of the novel.

**Oldenbarneveldt, JOHAN VAN** (1547-1619). Dutch lawyer. Born at Amersfoort, Sept. 14, 1547, he qualified as an advocate in 1569. A supporter of William the Silent, he served at the siege of Haarlem 1572-73, and of Leyden 1573-74. After William's murder, he helped to secure the stadholderate for William's son Maurice and was made advocate of Holland, 1585. Maurice as military leader and Oldenbarneveldt as statesman held the United Provinces together in the next critical years. Differences arose during negotiations for a truce with Spain, brought to a successful end in 1609 by Oldenbarneveldt; and the country was rent by strife between the Calvinist or Gomarist party led by Maurice and the Remonstrants or Arminians led by Oldenbarneveldt who was eventually arrested, 1618, tried by a special commission, condemned, and beheaded at The Hague, May 13, 1619.

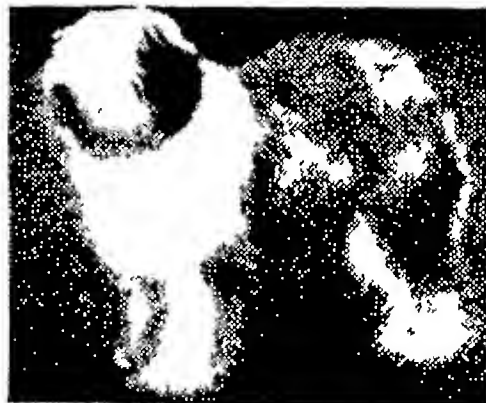
**Oldenburg.** A former grand duchy, later free state, of Germany; area, with detached portions in Holstein and the S. Rhineland, 2,480 sq. m. In early times it was the homeland of Saxon tribes; the name Oldenburg dated from 1059. It became a duchy in 1777, and in 1815 a grand duchy. A free state from

1918, it was united with Bremen under a Nazi chief in 1933. It became part of British-occupied Germany, 1945, and was joined, 1946, with Hanover and Brunswick to form the *Land* of Lower Saxony (Niedersachsen).

Oldenburg was famous for its breeds of horses, cattle, and sheep. Fishing, shipbuilding, fish and food preserving, engineering, and textile weaving were other occupations.

**Oldenburg.** A city of W. Germany, formerly the capital of Oldenburg state. It is on the Hunte, 26 m. W. of Bremen. The inner town contains many ancient though restored buildings, *e.g.* the churches of S. Lambert, 13th century; Holy Ghost, 1468; S. Gertrude, 1481. There are two town halls, one ancient; a palace in Renaissance style, 1607-15; several museums, two fine libraries, an art gallery, and an academy of engineering. Pop. (1955 est.) 120,800.

**Old English Sheepdog.** Old breed of dog, often called the bobtail; there is an example in one of Gainsborough's pictures. Among the earliest to appear at dog shows in the middle of the 19th century, the bobtail is intelligent, docile, affectionate, and sensitive. It is a muscular dog with a capacious, squarish skull, long, square jaw, small ears, dark or wall eyes, and a well arched neck. The body is short and compact, with the back



Old English Sheepdog

sloping up from neck to loin. The tail is docked. When the animal walks or trots the two legs of the same side move forward together, alternating with the two of the opposite side; this gives a characteristic roll to the gait. The coat is long, profuse, hard in texture, shaggy,

and free from curl, with a close waterproof undercoat. Colour: grey of any shade, grizzle, blue or blue merle; white markings are not favoured. Dogs should measure 22 ins. and upwards, bitches slightly less.

**Oldfield, ANNE OR NANCE** (1683-1730). An English actress. Introduced to the stage by



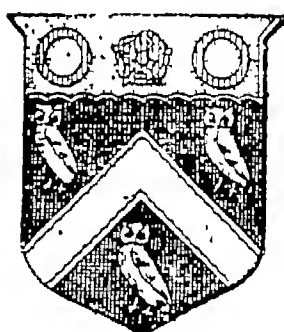
Anne Oldfield,  
English actress

Farquhar and Vanbrugh, she first attracted attention at Drury Lane by her creation of two comedy rôles, Lady Betty Modish in Cibber's *Careless Hus-*

band, and Biddy Tipkin in Steele's *Tender Husband*. Renowned for beauty and talent, she played original parts in Addison's *Cato*, Rowe's *Jane Shore* and *Lady Jane Grey*, and Thomson's *Sophonisba*. She died Oct. 23, 1730. A comedy by Charles Reade, entitled *Nance Oldfield*, was produced at The Olympic, Feb. 24, 1883.

**Oldfield, WILLIAM ALBERT** (b 1897). Australian cricketer, born at Sydney, Sept. 9, 1897. He first appeared in England with the Australian Imperial Forces team which toured in 1919. One of the finest wicket-keepers known in the game, he played regularly in test matches from 1924 to 1937. Once he gave away no byes in two English innings totalling 863. He was also a sound batsman late in the innings.

**Oldham.** A county borough of Lancashire, England. It stands on the Medlock, 6 m. N.E. of Manchester, and is served by rly.



Oldham arms

The principal buildings are the town hall, art gallery and library, school of art, and technical college. Over 100 schools are administered by local authority, while there are two endowed independent grammar schools. The town is the centre of the cotton spinning industry, and makes textile machinery. Alexandra Park has tree-lined walks, floral displays, bowling greens, tennis courts, a boating lake, etc. There are also suburban parks and bowling greens. Oldham made hats in the 18th century, but really developed from about 1790 with the introduction of cotton manufacture. It began to send two members to parliament in 1832, but was not made a corporate town until 1841. Market days, Mon. and Sat. Pop. (1951) 121,266. With adjacent urb. dists. it forms two bor. constituencies.

**Oldham, JOHN** (1653-83). English poet. Born near Tetbury, Glos, Aug. 9, 1653, and educated at S. Edmund Hall, Oxford, he was a schoolmaster and tutor, and was then befriended by the earl of Kingston, at whose place, Holme Pierrepont, Notts, he died of



John Oldham,  
English poet  
After Dobson

smallpox, Dec. 9, 1683. Oldham's reputation rests chiefly on his satires, especially *Satires upon the Jesuits*, 1681. These, though rugged in versification, are interesting as being the lineal predecessors of the satirical writings of Pope.

**Old Jewry.** A London street. Leading N. from Poultry to Gresham Street, E.C., and known in 1181 as *The Jewry*, and later as *Colechurch Lane* and *Sakfrerelane*, it was once a Jewish quarter. In 1641 Sir Robert Clayton built a house here, which became the first home of the London Institution in 1806, and was taken down in 1863. The headquarters of the City of London police are at 26, Old



Oldham, Lancashire. Church of S. Peter, opened 1901 on the site of a church consecrated in 1768

**Jewry.** Half the W. side of the street was destroyed by German bombs in air raids during the Second Great War.

**Old Kent Road.** Thoroughfare of S. London. From the junction in Bermondsey of New Kent Road, Great Dover Street, and Tower Bridge Road, it runs S.W. 1 mile 6 furlongs to New Cross. Busy shopping districts alternate with residential areas along both sides, and it carries bus and Green Line services. The main exit from London to Kent, it received severe damage from bombs and rockets in numerous air raids over south London during the Second Great War.

**Old Man** OR **LAD'S LOVE.** Popular name for southernwood (*Artemisia abrotanum*). See *Artemisia*; *Southernwood*.

**Old Man Cactus** (*Pilocereus senilis*). Succulent perennial herb of the family *Cactaceae*. A native of Mexico and Guatemala, it has a fluted cylindrical stem from 20 to 35 ft. high, the ridges bearing tufts of long white spines and long white hairs.

**Old Man of Coniston.** Mountain in the Furness dist. of Lanes, England. A familiar landmark of the Lake District, N.W. of Lake Coniston, it is 2,635 ft. high. Close to the Cumberland border it forms the S. termination of the Cumbrian Hills.

**Old Man of the Mountains.** Name given to Hassan Ibn Sabbah (Sheikh-al-Jebal), founder of the secret Mahomedan sect known as the Assassins (*q.v.*).

**Old Man of the Sea, THE.** Character in *The Arabian Nights' Entertainments* (*q.v.*). In his fifth voyage Sindbad the Sailor, having been wrecked, assists a helpless old man by carrying him on his back. The old man twines his legs round Sindbad's neck and cannot be dislodged until he has been made thoroughly drunk.

**Old Man's Beard.** Rustic name for (1) traveller's joy or wild clematis (*Clematis vitalba*), a hedge plant; (2) a lichen, *Usnea barbata*, which attaches itself to the rowan tree.

**Old Masters.** Term applied to painters of a bygone age, and of established reputations; also used of the works produced by them. See *Art*; *Painting*.

**Old Mortality.** First of Scott's *Tales of My Landlord* ("arranged by Jedediah Cleishbotham, schoolmaster and parish-clerk of Gander-cleugh"), and fourth of the *Waverley* novels. It was published with *The Black Dwarf* in Dec., 1816. The title was suggested by the hobby of Robert Paterson, a stone-cutter who wandered about Scotland for some forty years repairing the graves of the Covenanters, of whose fiery zeal the novel contains many vivid pictures together with graphic impressions of the battles of Drumclog and Bothwell Brig. The marriage of the hero, Henry Morton, with the heroine, Edith Bellenden, is brought about in one of the most convincing love-stories written by Scott.

**Old Pretender.** Name given to James Edward (*q.v.*), the son of James II and Mary of Modena, and claimant to the English throne in the early 18th century.

**Old Red Sandstone.** In geology, name given to a series of Palaeozoic rocks. They are named from their commonest constituent, red sandstone, but the series also contains grey, yellow, and green sandstones, and limestones and clay beds. The rocks of the group are of immense thickness, computed to be 20,000 ft. thick in Scotland, and are called Old to dis-



tinguish them from similar deposits of a later period of geological time. The series lies below the Carboniferous strata. The time of the formation of Old Sandstone rocks corresponds to that of the Devonian marine deposits. The series is found in Scotland, Wales, Ireland, Russia, where it alternates with Devonian deposits, Scandinavia, and N. America. Some Old Red Sandstone rocks contain no fossils; in others there are remarkable remains of fossil fishes and plants. See Devonian; Triassic.

**Old Street.** Street in the boroughs of Finsbury and Shoreditch, London. It runs from West to East, from Aldersgate Street to High Street, Shoreditch. Mainly commercial in character, its buildings include the Shoreditch town hall, a police court, and a station on the Northern line.

**Old Style.** See Calendar.

**Old Testament.** Name given to the collection of books which form the first part of the Bible and give an account of the history and religion of the Jewish people from the earliest times to the beginning of the Christian era. From one point of view, the O.T. is the literature of the Jewish nation; from another, it is the record of the Divine education of Israel for the reception of the Christian Revelation.

The books as they stand in the English Bible were written during the 600 years between 750 and 150 B.C., but many of them embody documents and excerpts which go back to a much earlier period. It was only gradually, however, that these books were collected together into what is known as the O.T. canon. The process of forming the canon took about 500 years. It commenced c. 440 B.C. and was not finally completed till the synod of Jamnia, in A.D. 90.

There are three well-defined stages in the growth of the O.T. (1) The earliest canon, which was formed c. 440 B.C., contained the Hexateuch including the book of Joshua. The explanation of the canonisation of the Pentateuch (without Joshua) is to be found in the fact that it contains the Law of God, on which the whole national life was centred. (2) About 200 years later the first edition of the O.T. was expanded by the addition of the prophetic writings, or the major part of them, among which were included the historical books known as Samuel and Kings. (3) During the last two centuries B.C. various other additions were made at different times, known as "the writings," including

Job, The Psalter, the Minor Prophets, Proverbs, Ecclesiastes, Chronicles, etc.

For some time several of these books were the subject of considerable controversy, e.g. Esther, Ecclesiastes, etc., but by the decision of the synod of Jamnia their inclusion in the canon was finally sanctioned. It was the destruction of Jerusalem and the loss of the Temple that finally gave the O.T. its supreme place in the religion of the Jewish race, and its adoption by the Christian Church secured it a position which it could not otherwise have gained. The process of enlarging the canon was continued in Alexandria, after it was completed in Palestine. The Alexandrians made a fourth addition, consisting of the books which are now placed in the Apocrypha (q.v.). This addition is recognized as canonical by R.C.s, but not by Protestants. See Bible; Criticism, Biblical; Hexateuch; and the articles on the various books and personalities of the Old Testament.

**Old Trafford.** Suburb of Manchester, in the W. of the city proper. Here is the cricket ground of the Lancashire County club.

**Old Vic.** London playhouse in The Cut, Waterloo Road, S.E.1. It was opened in 1818 as the Royal Coburg, which became a popular place of entertainment; many famous performers, including Edmund Kean, played there. In 1833 its name was changed to the Royal Victoria theatre (hence the nickname "Old Vic"). Emma Cons (1838-1912), a social worker, appointed manager of the theatre in 1879, took it over in 1880, and renamed it the Royal Victoria Coffee Music Hall, offering within its walls "a purified entertainment and no intoxicating drinks." Her niece Lilian Baylis (1874-1937) joined her, and in 1898 succeeded her as manager.

In 1914 the first season of Shakespeare's plays was presented; and by 1923 the Old Vic had become the first theatre in the world to present the entire cycle of Shakespeare's plays. In 1929 Ninette de Valois joined the theatre and laid the foundations of its ballet company (see Royal Ballet). In 1931 Lilian Baylis opened the new theatre at Sadler's Wells.

The Old Vic was closed in 1940 through damage by aerial bombs, and the company was based first on the Victoria theatre, Burnley, and during 1946-50 on the New Theatre, London. The Old Vic

theatre became the home of a theatre school, 1940, and in 1941 the h.q. of the Young Vic, a touring company for the younger audience. In 1950 the renovated Old Vic theatre reopened to the public; the Young Vic co. was discontinued in 1951, the school in 1952. During 1953-58 the Old Vic presented in five consecutive seasons the 36 plays in the First Folio of Shakespeare.

Among those famous in the British theatre who have been associated with the Old Vic—many of them both before and after achieving fame—may be mentioned Robert Atkins, Edith Evans, Sybil and Russell Thorndike, Athene Seyler, Nicholas Hannen, Charles Laughton, Jean Forbes-Robertson, John Gielgud, Laurence Olivier, Alec Guinness, Ralph Richardson, Peggy Ashcroft. Old Vic companies have toured throughout the world; and the Old Vic is responsible for the Theatre Royal, Bristol, where the Bristol Old Vic company presents seasons of plays, and a school of acting is maintained. The Old Vic works in association with the Arts Council of Great Britain.

**Old Wives' Tale, THE.** Novel by Arnold Bennett, published 1908, and generally considered the author's masterpiece and among the greatest works of English fiction. Some 250,000 words in length, it relates with a tenderness and sympathy unusual in the author as well as with all his faithful observation of minute objective detail, the life stories of two sisters from childhood to old age and death. The period is Victorian, and the scene is principally the Potteries (or Five Towns), with a long interlude in Paris which includes a description of life there during the siege of 1870. In the writing of the MS. Bennett adopted an exquisite style of calligraphy and made astonishingly few corrections; a complete facsimile was published in 1927, in a limited edition, 2 vols.

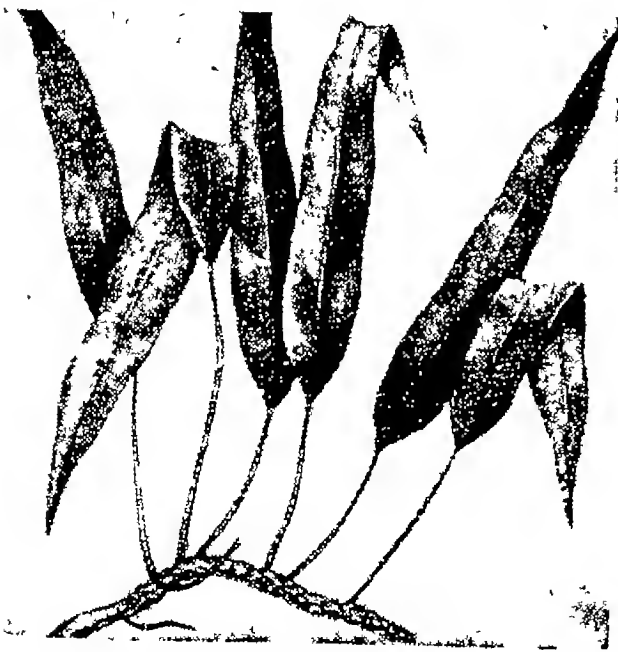
**Oleaceae.** The olive family of trees and shrubs. They are natives of the tropical and temperate regions, chiefly of the N. hemisphere. They have opposite leaves and four-part flowers, the calyx and corolla being sometimes absent. Representative genera are *Olea* (olive), *Fraxinus* (ash), *Jasminum* (jessamine), *Syringa* (lilac), and *Ligustrum* (privet).

**Olean.** City of New York, U.S.A., in Cattaraugus co. It stands at the junction of the Olean

Creek and the Allegheny river, 70 m. S.S.E. of Buffalo, and is served by the Erie and other rlys. Its buildings include the state armoury. Near by is Rock City, a group of uniform conglomerate rocks about 40 acres in area. Olean lies near the Pennsylvania oil and natural gas region, for the produce of which it provides storage, also making oil-well machinery. Other industries include tanneries and engineering works. Settled in 1804, Olean came to life as a lumber camp. A city charter was granted to it in 1893. Pop. 21,506.

**Oleander** (*Nerium oleander*). Evergreen shrub of the family Apocynaceae, native of the Mediterranean region. The erect stems grow to a height of 14 ft., and the narrow lance-shaped, leathery leaves are in whorls of three. The large, bright-red, funnel-shaped flowers are produced in clusters. The plant grows by riversides, and all parts of it are extremely poisonous, so that care is needed in handling it, pruning, etc.

**Oleandra**. Small genus of tropical ferns, natives of Ceylon, Natal, N. India, Malaya, Mascarenes, and the W. Indies. Their average height is 1 ft., and in temperate climates they thrive in hot-houses in a mixture of peat and loam. They should be planted in early spring, and receive plenty of water until the autumn. Oleandras



Oleandra. Rootstock with leaves, one turned to show spores

are propagated by spores from the back of the leaves of the ferns, sown in sandy soil at an average temperature of 75°.

**Olearia**. Genus of trees and shrubs belonging to the family Compositae, natives of New Zealand and parts of Australia. They are distinguished by the fact that



Olearia. Flower clusters and leaves of *O. haasti*

they yield a multitude of small white or blue daisy-like flowers. *Olearia haasti* is the most familiar of the many species.

**Oleaster** (*Elaeagnus*). Genus of shrubs of the family Elaeagnaceae, natives of Europe, Asia, and N. America. The shrubs range in height from 5 to 20 ft., and thrive in any ordinary soil, especially in S. or W. positions. They are increased by seeds sown in boxes of light soil in early spring, or by cuttings taken in autumn. The flowers are yellow, white, and occasionally green in colour.



Oleander. Flower and leaf of this evergreen shrub

The simplest representative of the series is ethylene,  $C_2H_4$ , also known as olefant gas. The lower members are gases at the ordinary temperature, and are followed by others which are liquids and solids. The distinction between them and the paraffins is that the olefines do not carry the maximum complement of hydrogen. They are therefore unsaturated and readily form addition compounds. See Hydrocarbon.

**Oleic Acid**. Acid occurring in most natural animal and vegetable oils and fats as the glyceride triolein. At ordinary temperatures it is an almost colourless oily liquid, which on exposure to light and air slowly becomes yellow and rancid. See Fatty Oils; Soap.

**Olein**. Commercial term applied to triolein, the glyceride of oleic acid, and to any liquid oil obtained from fats by pressure. It is also applied to impure oleic acid and to the sylpholeates. Triolein occurs naturally in fats and oils, and can also be prepared by heating glycerine with oleic acid. It is a colourless oily liquid devoid of smell and taste. The liquid is made on

a large scale commercially for the manufacture of margarine (*q.v.*).

**Olekma**. River of Asiatic Russia. It rises in Yablonoi mts., Chita region of the R.S.F.S.R., flows N. into Yakutsk A.S.S.R., and discharges itself near Olekminsk into the Lena, after a course of 700 m. The neighbourhood abounds in furred animals, especially the sable, and gold is found.

**Ole Luköie** (Dan., Olaf the Eye-shutter). The Danish equivalent of the legendary character known to children as the Dustman. It is the title of one of the longer stories of Hans Andersen. Ole Luk-Oie was also the pen-name adopted by Sir Ernest Swinton (*q.v.*) for his works of fiction.



Oleaster. Spray of foliage and flowers

**Olenek**. River of Siberia, in Yakutsk A.S.S.R. After a tortuous course of 850 m. it discharges by a delta into the Arctic Ocean.

**Olenellus**. Genus of trilobites belonging to the Lower Cambrian series of rocks. The animal had a flat, tapering body of 14 or more jointed segments, covered with a hard shell like a lobster. The head was comparatively large and broad, the tail long and slender. The body, head, and tail were usually provided with slender spines. *Olenus* is a similar fossil belonging to the Upper Cambrian series of rocks. These are the oldest fauna discovered by geologists. See Trilobites.

**Oleograph** (Lat. *oleum*, oil; Gr. *graphein*, to write). Name given to a kind of chromolithograph which imitates the effect of an oil painting. The colours used are generally darker than the corresponding ones for ordinary chromolithographs, and the resultant print is mounted on canvas and varnished, to imitate still more closely the oil-painting effect.

**Oléron**. Island off the W. coast of France, opposite the mouths of the Charente and Seudre. About 18 m. in length and 7 m. in extreme



breadth, with an area of 66 sq. m., it is included in the department of Charente-Inférieure. The chief places are St. Pierre, Château d'Oléron, and St. Trojan-les-Bains. Pop. 15,000. Oléron lay within the Gironde redoubt left behind by the German army in its retreat from France, 1944; French troops of the 1st army took it, May 1, 1945, the last point in the Gironde pocket to be cleared of the enemy.

Oléron gave its name to a code of maritime law. This was composed of judgements of the maritime court here, together with a collection of the accepted customs of the sea. It was introduced into England in the 12th century, England and Aquitaine being then under the same sovereign, and had influence on later developments of this branch of law.

**Olfactory Nerve.** Nerve of smell. It arises from the brain by three roots, uniting in the olfactory tract, which expands at its end into the olfactory bulb. From the bulb about 20 fine prolongations are given off, which pass through the cribriform plate of the ethmoid bone, and terminate in the olfactory mucous membrane in the upper part of the nose and nasal septum. *See* Nerve; Nose.

**Olga** (d. 968). Russian saint. She was the peasant wife of Igor, third grand duke of Russia, who first met her while hunting, and married her about 913. She became regent for her son, Sviatoslav, and is said to have been a capable ruler. After Igor's death, 946, she carried out a terrible vengeance on the Drevliens, who were guilty of his death. She went to Constantinople, where she was baptized and received the name of Helen. She was canonised by the Greek Church. Her feast day is July 11, O.S.

**Olhão.** Seaport of Portugal, in the prov. of Faro. It stands on the S. coast in a garden-like region, facing the Atlantic, 6 m. by rly. E. of Faro. It is noted for its sardine fisheries and canning houses, and engages in boat-building and the manufacture of cordage and sails, exporting figs, almonds, carobs, chestnut, cork, sumach, baskets, and tunny. Pop. (1950) 31,903.

**Olibanum Tree** (*Boswellia serrata*). Small evergreen tree of the family Burseraceae, native of the East Indies. Its leaves are divided into two rows of oval-oblong leaflets with saw-toothed edges. The small white flowers are borne in sprays. From the bark exudes a resinous gum, olibanum, believed to be the frankincense



Olibanum Tree. Foliage and fruit of the East Indian evergreen. Inset, flower sprays

of the ancients. It is astringent and stimulant, but is chiefly employed as incense. According to some authorities true frankincense is the product of *B. carteri*, an African species.

**Olifants.** Name of several rivers in S. Africa, of which the following are the chief: (1) River rising in the mountains N.E. of Cape Town and flowing about 150 m. N.W. to the Atlantic. It supplies irrigation water to Van Rhyn's Dorp. (2) River rising in the Kareeberg, Cape Province, and flowing N.W. into Great Bushmanland. (3) Tributary of the Gouritz river, Cape Province, flowing W. from the neighbourhood of Uniondale. (4) Tributary of the Limpopo, rising near Ermelo, S.E. Transvaal, and running N. and then E. to the Limpopo, which it enters in Mozambique.

**Oligarchy** (Greek *oligon*, few; *archem*, to rule). Political term, meaning government by the few. It was used by Aristotle to describe a perverted form of aristocracy; it was government by the few in their own interests, whereas aristocracy was government by the best men in the public interest. Some of the city states of Greece had an oligarchical government, and so had Venice and other Italian republics. A well-known British example was the Whig oligarchy brought into existence by the events of 1688. *See* Government; Politics.

**Oligocene System** (Greek *oligon*, a little; *kainos*, new). In geology, a subdivision of the Tertiary period of time. It was the epoch which followed the Eocene and preceded the Miocene. Sediments of the Oligocene occur in Hants, the Isle of Wight, and at Bovey Tracy, Devon, where they contain lignite and pottery clays.

Oligocene beds are also found in the Paris Basin (*q.v.*), containing the gypsum deposits of Montmartre, gritstones, and lignite. There are rocks of the same age in Belgium and Germany. In the New World, the White River formation of Colorado is of this age, while Oligocene beds are known in the N.W. Territory of Canada. The beds are rich in fossil remains, including that of the three-toed horse, *Mesohippus*, crocodiles, turtles, large land snails, insects, etc. *See* Eocene; Geology; Miocene.

**Oligoclase** (Gr. *oligon*, little; *klasis*, fracture). In geology, name given to one of the plagioclase (*q.v.*) or soda-lime feldspars. It is a sodium-calcium aluminium silicate, white with occasional grey, green, or red shades, and has a vitreous lustre. Varieties of oligoclase containing finely scattered grains of iron oxide are polished to make the gems known as sun stones. Oligoclase is found in subacid and intermediate igneous rocks (syenites, diorites, and their volcanic equivalents); accompanying orthoclase in many granites; and in metamorphic rocks, *e.g.* schists and gneisses.

**Olinda.** City of Brazil, in the state of Pernambuco. It stands on the coast, 4½ m. by tramway N. of Recife or Pernambuco. It has a cathedral, botanical gardens, colleges, law school, and a wireless telegraphy station. It was founded in 1535, and was the capital of the state for over 200 years, until superseded by Recife. Pop. 8,000.

**Oliphant, LAURENCE** (1691-1767). Scottish Jacobite. Of the family of Oliphant of Gask, prominent Perthshire royalists.



Laurence Oliphant, Scottish Jacobite

he took part in the rising of 1715, and became laird of Gask on his father's death, 1732. He accompanied Charles Edward in the '45.

and, with his son Laurence (1724-92), fought at Prestonpans, Falkirk, and Culloden. After the last battle father and son escaped abroad and the estate was forfeited. The elder returned to Scotland in 1763, his lands having meanwhile been purchased on his behalf from the crown, and died in Jan., 1767. *See* Nairne, Baroness.

**Oliphant, LAURENCE** (1829-88). British author. He was born at Cape Town, a son of the attorney-general of Cape Colony, educated in

Ceylon, and practised at the colonial bar. In 1853 he became private secretary to the earl of



Laurence Oliphant,  
British author

Elgin, governor-general of Canada. He was M.P. for Stirling Burghs and sat in parliament 1865-68. Then he fell under the influence of Thomas Lake Harris (*q.v.*), and for a short time joined his religious community at Brocton, N.Y. Oliphant afterwards acted as correspondent for The Times in the Franco-Prussian War, and interested himself in a scheme for settling the Jews in Palestine. He died Dec. 23, 1888. Among his works are several travel books; Piccadilly, 1870, a brilliant satire; the mystical Sympneumata, 1885; and Scientific Religion, 1888.

**Oliphant, MARCUS LAURENCE ELWIN** (b. 1901). An Australian physicist, born at Adelaide, Oct. 8, 1901. He was educated at Adelaide high school and Trinity College, Cambridge. He became assistant director of research, Cavendish Laboratory, Cambridge, in 1935, and professor of physics at Birmingham university in 1937; then in 1948 was designated director of post-graduate research in physical sciences in the national university of Australia. He wrote on electricity in gases, surface properties, and nuclear physics, and was one of those who developed the atomic bomb.

**Oliphant, MARGARET OLIPHANT** (1828-97). British author. Born April 4, 1828, in Midlothian, she made her reputation with her first book, Passages in the Life of Mrs. Margaret Maitland, 1849, and thereafter produced more than 100 books. In 1859 her husband, Francis Wilson Oliphant, died, and her industry was the sole support of her own three children, and after 1864 of a widowed brother and his three children as well. Mrs. Oliphant died at Windsor, June 25, 1897. Among her best known novels are Caleb Field, 1851; Lilliesleaf, 1855; Zaidee, 1856; Salem Chapel, 1863; The Minister's Wife, 1869; The Wizard's Son, 1884; Kirsteen, 1890. She also wrote historical



M. O. Oliphant,  
British author

works and popular biographies of Edward Irving, 1862, and S. Francis of Assisi, 1871.

**Olivares, GASPARD DE GUZMAN, COUNT OF** (1587-1645). Spanish statesman. Born at Rome, Jan. 6, 1587, he was educated at Rome and Salamanca. Securing a position at court, he became first minister of the crown and grand chamberlain to Philip IV, and for 24 years was the real ruler of Spain. While vigilant and hard-working, he brought the country to the verge of ruin by harsh taxation. He was outmanoeuvred by Richelieu, and the warfare to which he committed Spain brought no profit. Revolts having broken out in Portugal and Catalonia, Olivares was exiled in 1642 and died July 22, 1645.



Count of Olivares,  
Spanish statesman

**Olive** (*Olea europea*). Small evergreen tree of the family Oleaceae (*q.v.*), native of the Mediterranean region. It attains a height of about 20 ft., and has almost four-sided spiny branches and opposite oblong leaves. The small, white funnel-shaped fragrant flowers are produced in panicles, and the fruit is a small plum. This is the wild form. Pickled olives and olive oil are the produce of the variety *sativa*, which has been cultivated from time immemorial. It differs from the wild form in the branches being less square, without spines, the leaves more lance-shaped, and the fruit much larger and more fleshy. The oil is obtained from the fleshy part of the fruit by pressure, but much of the "olive oil" of commerce is more or less extensively adulterated with oils of cotton-seed, monkey-nut, sesame, and walnut. Pickled olives have had their natural bitterness reduced by soaking in a solution of lime and wood-ashes, after which they are bottled in salt and water variously flavoured.

The olive is cultivated occasionally in Great Britain as a greenhouse plant, and outdoors in a few favoured S. and W. localities. It is of easy culture in well-drained loam, and may be propagated by

means of cuttings of firm shoots or by seeds, treated as half-hardy subjects. Several species from the Cape of Good Hope (*O. capensis*, *O. laurifolia*, *O. verrucosa*) are found in cultivation.

**Olive Branch Petition.** Name given to a petition by the American colonists in 1775 pleading for the recognition of their constitutional claims by the British government. The petition was a last effort for a peaceful settlement, though hostilities had already begun when it was sent. The deputation was not allowed to present the petition. See United States: History.

**Olive Oil.** Oil obtained from the ripe fruit of *Olea europea*, the olive tree of S. Europe. Extensively used in cookery in S. Europe, it is chiefly employed in the N. as salad dressing. It is nutritious and mildly laxative, and finds uses as a constituent of ointments, liniments, cosmetics, and soaps.

**Oliver** (Lat., olive). Masculine Christian name. Feminines are Olive and the less familiar Olivia. Oliver was the name of one of the twelve peers of Charlemagne, and the phrase a Roland for an Oliver refers to the tremendous blows struck by these heroes when fighting in Spain. See Roland.

**Oliver, EDNA MAY** (1883-1942). American actress. Her real name was Nutter. Born at Boston, Mass., Jan. 12, 1883, she intended to become a singer, but owing to lack of means went on the stage, making her debut at Boston in 1911.

From her entry into films in 1929 she was a famous portrayer of eccentrics and dowagers, giving memorable performances as Betsey Trotwood in David Copperfield, and as the Nurse in Romeo and Juliet. One of her last rôles was that of Catherine de Burgh in Pride and Prejudice, 1940. She died Nov. 9, 1942.



Edna May Oliver,  
American actress

**Oliver** OR OLIVIER, ISAAC (c. 1556-1617). Anglo-Fr. miniature painter. After living in Rouen he settled in London, where he died Oct. 2, 1617, being buried in S.



Olive. Foliage and flowers  
of this South European tree



Anne's church, Blackfriars. Among his famous miniatures were those of Sir Philip Sidney and Henry, prince of Wales, both at Windsor Castle. He also executed some minutely finished portraits in oils. Isaac's son Peter (1594-1648) was another celebrated miniaturist.

**Oliver**, VICTOR (b. 1898). Austrian-born British comedian. Son of Baron von Samek, he was born July 8, 1898, and educated at Vienna university. Renouncing his title, he became a pianist, but in 1926 went to the U.S.A., toured in vaudeville, and first appeared on the New York stage in 1929. His London debut was at the Palladium in 1931, and he was in demand as a compère of revue and musical comedy, e.g. *Black and Blue*, 1939; *Get a Load of This*, 1941; *The Night and the Music*, 1945. In 1938 he won a radio popularity contest. He was married from 1936 to 1945 to Sarah, daughter of Winston Churchill.

**Oliver Twist**. Charles Dickens's first long continuous story. It appeared serially in Bentley's *Miscellany*, under his own editorship, Feb., 1837-March, 1839, with the sub-title *The Parish Boy's Progress*. The original book edition had illustrations by Cruikshank. Earlier instalments were written and published contemporaneously with the writing and publishing of the monthly parts of *The Pickwick Papers*. Branding the old workhouse system, it also pictures contemporary crime in its "miserable reality." Famous characters include Bumble, the pompous parish beadle and later workhouse master; Fagin, the old Jew who ran a gang of thieves; Bill Sikes, the brutal burglar and murderer; and the Artful Dodger, a diminutive pick-pocket. Oliver's "asking for more," which has become proverbial, refers to his appeal for a second helping of workhouse gruel. There have been several stage versions, Tree having been a memorable Fagin. A British film version was shown in 1948.

**Olives**, MOUNT OF, OR OLIVET. Mt. about 2,700 ft. high, situated E. of Jerusalem, from which it is separated by the valley of the Kidron. Its chief

of the mountain He wept over Jerusalem; and from its summit He ascended into heaven. *See* Bethany.

**Olivetans**. Reformed branch of the Benedictine Order, known as the Congregation of Our Lady of Mount Olivet. It was founded in 1313 at Siena by Giovanni de' Tolomei, professor of philosophy in the university there, who became their first abbot-general in 1319. The Olivetans follow the rule of S. Benedict, but with somewhat stricter observances.

**Olivier**, SYDNEY HALDANE OLIVIER, 1ST BARON (1859-1943). British politician and reformer. Son of a clergyman, he was born April 16, 1859, and educated at Tonbridge and Corpus Christi, Oxford, joining the Colonial Service in 1882. He early became associated with the Fabian Society, of which he was secretary, 1886-1890. He held a number of appointments in the W. Indies; colonial secretary of Jamaica, 1899-1904, he returned there as governor in 1907, and was knighted in that year. He was permanent secretary of the board of agriculture 1913-17, then assistant comptroller and auditor of the exchequer, retiring in 1920. In 1924 he was secretary for India in the Labour government, being raised to the peerage. He was a member of the commission which investigated the sugar industry in the W. Indies and British Guiana, 1929-30. His publications included *White Capital and Coloured Labour*, 1906; *The Anatomy of African Misery*, 1927; *Jamaica: the Blessed Isle*, 1936, as well as a volume of light verse. He died Feb. 15, 1943.

**Olivier**, SIR LAURENCE KERR (b. 1907). British actor and producer. Born at Dorking, May 22, 1907, he was educated at St. Edward's School, Oxford, and

after studying with Elsie Fogerty joined the Birmingham Repertory in 1926. He acted in London in *Bird in Hand*, 1928, and *Beau Geste*, 1929, in which year he first visited New York. He sprang to fame in 1935 by interchanging with John Gielgud the parts of Romeo and Mercutio



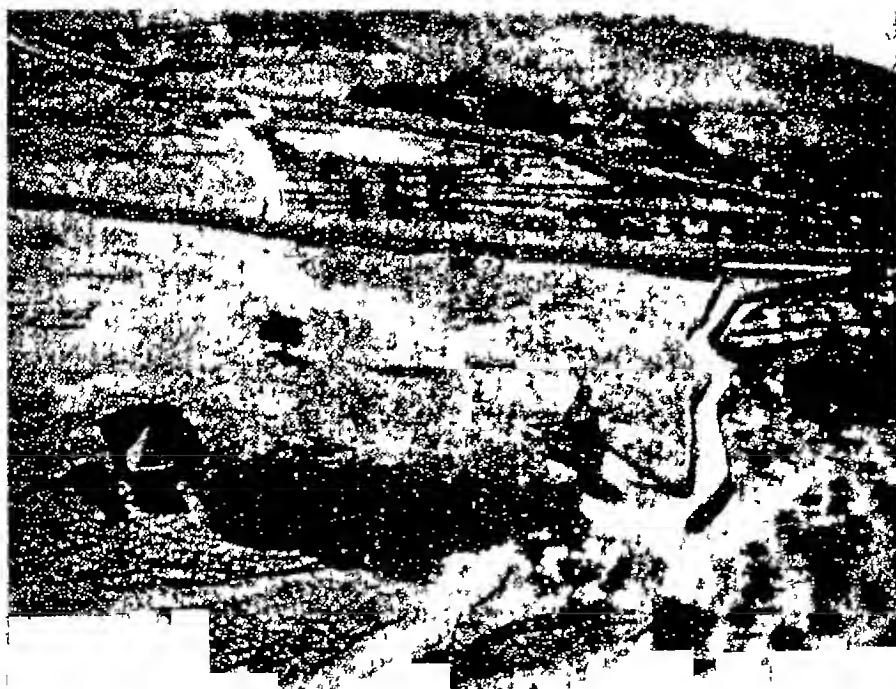
Sir Laurence Olivier  
British actor

at the New Theatre. In 1937 he joined the Old Vic company, giving virile performances as Hamlet, Henry V, and Macbeth. Co-director of the company 1944-46, he played Richard III, Hotspur, Shallow, Astrov in *Uncle Vanya*, Sergius in *Arms and the Man*, and was successful in *Oedipus Rex* and *The Critic* in the same programme. In 1945 he produced *The Skin of Our Teeth* and in 1949 *A Streetcar Named Desire*, in both of which his wife, Vivien Leigh (*q.v.*) played. His *Titus Andronicus*, 1956 made a success of that difficult play; and in *The Entertainer*, 1957, he achieved a personal triumph in an unlikely part.

Olivier entered films in 1930, and took leads in *Wuthering Heights*, 1939; *Rebecca*, 1940; *Pride and Prejudice*, 1940; *Lady Hamilton*, 1941. He achieved international fame with a screen version of *Henry V*, 1944, of which he was director and star, as he was of screen versions of *Hamlet*, 1948, and *Richard III*, 1956. He was knighted in 1947.

**Olivine**. In mineralogy, a ferrous and magnesium orthosilicate ranging from magnesium-rich forsterite (*q.v.*) to iron-rich fayalite (*q.v.*). Olivines are so called because of their olive-green colour. The mineral is a common constituent of igneous rocks, especially basalts, and is often found in meteoric stones; fayalite is occasionally found in acid igneous rocks. Cut and polished, it is used as a gem stone under the names of chrysolite and peridot. Olivine easily weathers into serpentine.

**Olla Podrida** (Span., putrid pot). Name originally given to fragments of meat, vegetables, etc., collected in a pot, and later to the favourite Spanish dish of highly seasoned stew. The name alludes to the contents of the pot being



familiar in the sense of a vase of dried flower-petals. The term, like hotch-potch, is also applied to any miscellaneous collection, such as a literary or musical medley.

**Ollerton.** Market town of Nottinghamshire, England. It stands on the river Maun, 9 m. N.E. of Mansfield, and has a rly. station. It is a convenient centre for visitors to Sherwood Forest and the Dukeries (*q.v.*) The nearby village of New Ollerton was built to house the workers in the colliery of that name. Pop. 4,500.

**Olmütz.** German and more familiar form of Olomouc, a town of Czecho-Slovakia, on the right bank of the March, 41 m. N.E. of Brno. The site of the fortifications is laid out with promenades. The cathedral of S. Wenceslaus is a 14th century Gothic structure, and S. Mauritius' church, belonging to the 11th and 12th centuries, is noted for its organ. Other buildings include the archiepiscopal palace and the old town hall. The population at the census of 1947 was 58,617.

Olmütz was unsuccessfully besieged by the Prussians in 1758.

**Olmütz, CONVENTION OF.** Agreement signed at Olmütz, Nov. 29, 1850, by Austria and Prussia. It restored the Austrian, as against the Prussian, influence among the German states, shaken by the events of 1848-49, and left the difficulties in Hesse-Cassel and Schleswig-Holstein to be settled by all the German states. See Germany: History.

**Olney.** Market town of Buckinghamshire, England. It stands on the Ouse, 11 m. W. of Bedford

**Olorgesailie.** Early Stone Age site in Kenya. Situated near Lake Mogadi at the foot of Mt. Olorgesailie, it was excavated in 1942 by L. S. B. Leakey.

**Olsa** (Pol. Olza; Ger. Olsau). Tributary of the river Oder, rising in the Tatra Mts. From 1920 this river marked the general frontier between Poland and Czecho-Slovakia, except that at one or two places the Czechs occupied small areas on the E. bank.

**Olsztyn.** Polish form of the name of the town of Allenstein (*q.v.*), formerly in East Prussia, capital of the Polish voivodship of Olsztyn (see under Masuria).

Another Olsztyn is a village in the Katowice voivodship, Poland, which stands on high ground above the Warta r.,  $7\frac{1}{2}$  m. S.E. of Czenstochowa. It has blast furnaces and smelting works, and was the site of a battle fought in Feb. 1831, during a Polish rising.

**Olten.** Town of Switzerland, in the canton of Solothurn. On the river Aar, 25 m. by rly. S.E. of Basel, it is an important rly. junction with large rly. engineering workshops and boot-and-shoe factories. Pop. (est.) 16,000.

**Oltenitza.** Town of Rumania. It stands 35 m. S.E. of Bukarest, on the left bank of the Argesul, 7 m. above its junction with the Danube. It is a river port and terminus of a branch rly. from the capital. Pop. (est.) 15,000.

**Oltul** or **OLTU.** Rumanian name of the tributary of the Danube known also as the Aluta (*q.v.*).

**Olympia.** Small plain in Elis in the Peloponnese, Greece, in ancient times the scene of the Olympic games (*q.v.*). It was situated on the right bank of the Alpheus, where it joins the Cladeus. See illus. in next page.

**Olympia.** City of Washington, U.S.A., state capital, and co. seat of Thurston co. It stands on a

promontory at the S. extremity of Puget Sound, 70 m. by rly. S.W. of Seattle, and is served by the Northern Pacific rly. and by steamers. Chief buildings are the capitol and federal building. The port of Olympia (700 sq. m.) established in 1926 receives annually over 200 ships trading in timber products, building stone,

oysters, oil, and fruit. It was the first port of entry on Puget Sound, though a customs house there dates from 1851. The Deschutes river supplies water power for Olympia. Pop. (1950) 15,819.

**Olympia.** London place of exhibition and entertainment. Situated in Hammersmith, it was opened in 1886 as the National Agricultural Hall. Later additions were the National Hall, 1922, and the Empire Hall, 1930. It is now the largest exhibition building in Great Britain, with floor space of 450,000 sq. ft. Among the outstanding early events at Olympia were: Paris Hippodrome, 1886; Barnum's Circus, 1889: the first international motor show, 1896; Buffalo Bill, 1902; Cochran's production of the Miracle, 1911; and the Carpentier-Gunboat Smith heavyweight championship fight, 1914. Annual shows there have included: Ideal Home Exhibition, British Industries Fair (part), Royal Tournament, Radiolympia, Shoe and Leather Fair, International Horse Show, and International Motor Show; also Bertram Mills's circus.

Olympia was requisitioned by the govt. in the First Great War as a German civilian internees' camp and then as an army clothing depot. During the Second Great War, in which the buildings suffered some bomb damage, it was in turn a civilian internment camp, an army vehicle depot, a Free French reception depot, an R.A.O.C. depot, a mess for H.Q. 21 army group, and a demobilisation centre.

**Olympiad.** The period of four years which elapsed between one celebration of the Olympic games and the next. It was the basis of a system of chronology used by the Greek historians, events being reckoned as so many olympiads from the first celebration.

**Olympic Games.** In ancient Greece, a great athletic festival held at Olympia; also a modern international athletic festival. The ancient festival, which was in honour of Zeus, lasted five days, and took place every four years at the first full moon after the summer solstice. There was a record of victors from 776 B.C., but the games were regularly held long before that date. By 620 B.C. the festival had been thrown open to all free-born Greeks. It was abolished in A.D. 394. During the celebration a truce was observed by the various Greek peoples, and visitors flocked from all parts to the games.

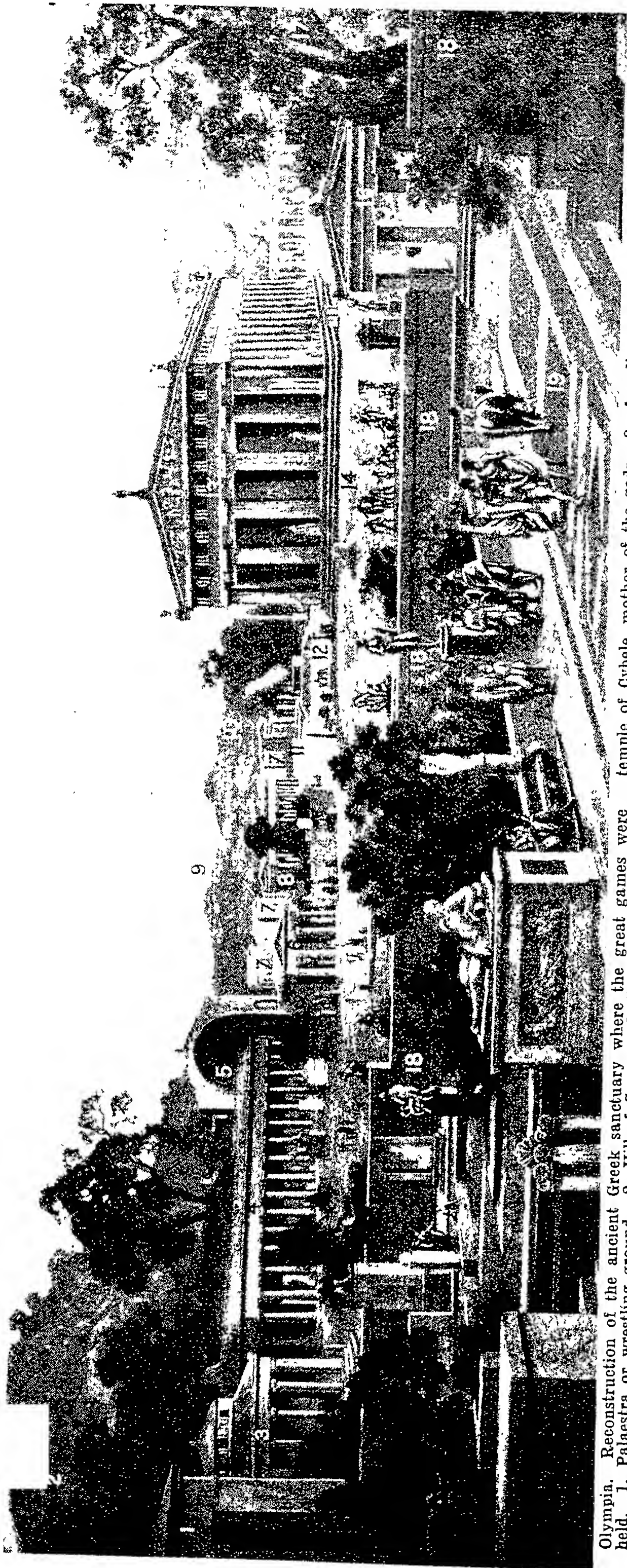
The centre of the festival was the precinct consecrated to Zeus and



Olney, Buckinghamshire. Summer-house in the garden adjoining Cowper's house, where *The Task* and John Gilpin were written

and 55 m. by rly. from London. Its large and beautiful church of S. Peter and S. Paul is a fine example of the Decorated style. Olney is known for its associations with William Cowper and John Newton. Cowper's house in the market place is now a museum devoted to the two men. Market day, Thurs. Pop. 2,400.





Olympia. Reconstruction of the ancient Greek sanctuary where the great games were held. 1. Palaestra or wrestling ground. 2. Hill of Cronos. 3. Philippeum, erected by Philip of Macedon. 4. Heraeum, temple of Hera. 5. Hall of Herodes Atticus, a famous Sophist and public benefactor. 6. Pelopium, grave of Pelops. 7. Treasuries. 8. Metroum,

temple of Cybele, mother of the gods. 9. Arcadian mountains. 10. Site of the city of Phrixia. 11. Porch of Echo. 12. Great altar of Zeus. 13. Temple of Zeus. 14. Statues of Messenian boys. 15. Statue of Nikē, goddess of victory. 16. Festal gate. 17. Sacred olive tree. 18. West Altis wall, enclosing sacred precincts. 19. Procession street

known as the altis, an enclosure 750 ft. by 550 ft. Here stood a temple of Zeus containing the magnificent statue of the Olympian Zeus by Pheidias, the Heraeum or temple of Hera, and other temples, treasuries in which the Greek states deposited their offerings, and the *bouleuterion*, or council chamber, for the accommodation of the presidents of the games. The site has been excavated since 1875 by German archaeologists, and among the results was the discovery of the exquisite statue of Hermes by Praxiteles. Outside the altis stood the palaestra or wrestling ground, the stadium or racing track, with accommodation for about 40,000 spectators, the hippodrome where the chariot racing took place, and the gymnasium where the competitors did their final training.

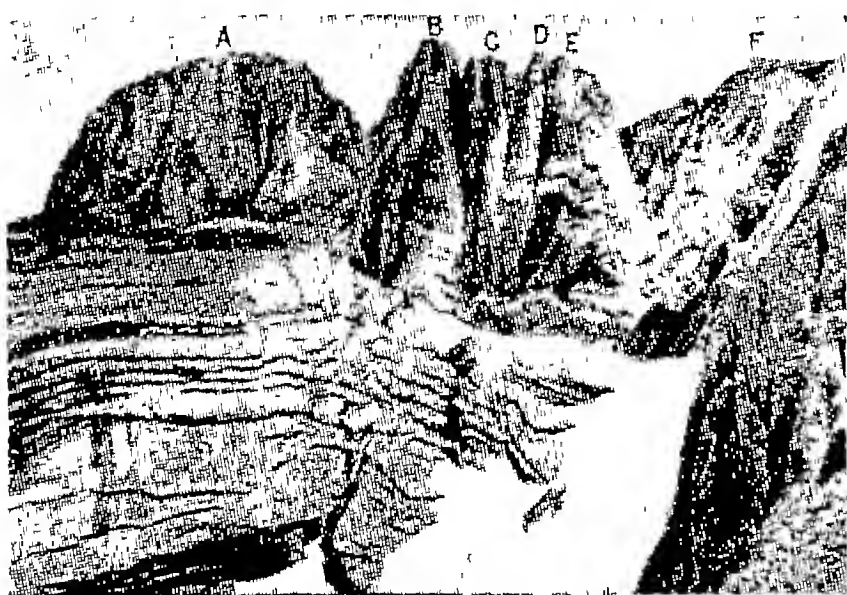
In historical times the chief events were: foot races, long and short, chariot races, the *pancratium*, a combination of wrestling and boxing, and the *pentathlon*, a combination of long jumping, throwing the discus and the javelin, running, and wrestling. The prizes were wreaths of olive, but a successful competitor enjoyed free maintenance for life by his native city, or received some other tangible reward for the honour he had brought to it. (See Ladas; Ludi.)

**MODERN FESTIVALS.** Olympic games, with an international entry, were held in Athens, 1896; Paris, 1900; St. Louis, U.S.A., 1904; London, 1908; Stockholm, 1912. Owing to the First Great War, the sixth meeting, due in 1916 in Berlin, was postponed until 1920, when it took place at Antwerp. Thereafter the games were held in Paris, 1924; Amsterdam, 1928; Los Angeles, 1932; Berlin, 1936. Nazi Germany made lavish preparations for these last games, which became a display of propaganda for the regime and were marred by exhibitions of racial prejudice when several events were won by negroes. The meeting of 1940 was allotted first to Tokyo, then to Helsinki, but was not held because of the Second Great War; that of 1944 was likewise abandoned. The 14th meeting, held in the London area, July-Aug., 1948, was actually the 11th to take place, but it is a rule that cancellation of any meeting must not alter the numbered sequence. New events in 1948 included rifle shooting. A pentathlon of winter sports was held at St. Moritz, Switzerland, Jan. 30-Feb. 8, 1948, nearly 1,000

athletes from 28 nations competing. The 1952 Games, reckoned as 15th in the modern series (actually 12th), were held at Helsinki, Finland. Competitors numbered 5,867 (573 women), from 69 countries (including the Soviet Union, for the first time since the 1917 Russian revolution, Germany and Japan for the first time since the Second Great War). Melbourne was the site of the 1956 games (See N.V.)

**Olympic Line.** Greek defensive position of the Second Great War. It extended from the Aegean Sea E. of Mt. Olympus to Veria and Edessa, thence N. to the Yugoslav frontier, total length 100 m. See Greece in Second Great War.

**Olympus.** Name of several mts., or mt. ranges, in ancient Greece. The best known forms the boundary between Macedonia and Thessaly, the highest peak of which reaches an alt. of 9,800 ft. On its snow-capped summit the



Olympus. Highest peaks of the mountain famous in the history of ancient Greece, with their modern names. A. Throne of Zeus. B. Peak Venizelos. C. Cock's Comb. D. Virgin. E. Tarpeian Rock. F. Black Peak

ancient Greeks placed the home of the gods, whence Olympus came to be used as a synonym for heaven, and later for the sky. Other mts. of the same name were in Lycia and Mysia in Asia Minor, in Cyprus, and in Laconia.

Mt. Olympus, Washington state, U.S.A., is 8,131 ft.

**Olynthus.** Ancient Greek city in Chalcidicē, at the head of the Toronaic Gulf, a few miles from the coast, where Mecyberna was its port. Under Perdiccas II it became a place of considerable importance. After the Peloponnesian war, in which it assisted Sparta against Athens, it was the head of a confederacy of Greek cities, and maintained its independence until besieged and captured in 348 B.C. by Philip of Macedon, who sold its inhabitants into slavery. In its last extremity it appealed to Athens, and Demosthenes, in a series of speeches called Olynthiacs, vainly urged his countrymen to send

help. Excavations on the site have been carried out by American archaeologists.

**Om** or **On** (Skt.). In Hindu religious literature, a solemn affirmation. The teacher begins and the pupil ends each lesson in the Veda with this word, which is equivalent to the Christian Amen (*q.v.*). Mystically, Om is regarded as symbolising the Hindu triad, Vishnu, Siva, and Brahma.

**Omagh.** Market town, urban dist., and county town of Tyrone, N. Ireland. It stands on the Strule, 34 m. S. of Londonderry, and has a rly. station. The chief buildings are the R.C. cathedral and the Protestant church. There are remains of an early castle rebuilt 1641. Linen is manufactured, and milling is another industry. The town, on its steep slope, is said to have grown around a religious house founded before 800. In 1689 the force of James II damaged it. Market day, Sat. Population (1951) 6,762.

**Omagua** (flat-head). South American Indian tribe of Guarani stock, whose habitat lies on the upper Ucayali river, Peru. Under Andean influence they formerly practised head-shrinking. Their fabled wealth led to several 16th century expeditions. For a century they have intermingled with other tribes. In Brazil they are called Umauas,

perhaps their original name

**Omaha.** Tribe of American Indians. They lived in an area now Nebraska, and carried on a long and bitter war with other tribes of the Sioux group. The remnants of the tribe live on a reservation in Nebraska. The name means people of the upper stream.

**Omaha.** City of Nebraska, U.S.A., the co. seat of Douglas co. The largest commercial and industrial city of the state, it stands on the Missouri river, about 500 m. N.W. of St. Louis, and is served by eight major rly. systems, as well as the trans-Continental Union Pacific, of which it is the E. terminus. The city is built on a plateau, the commercial portion lying below the residential quarter, close to the river, which is here spanned by three bridges communicating with Council Bluffs. Among notable buildings are the city hall, the U.S. government building, two cathedrals, a public

library, a convention hall and auditorium, and several imposing business blocks. It is the seat of Omaha and Creighton universities, and has, among other educational establishments, two medical colleges.

Omaha has upwards of 1,000 acres of parks, and the military headquarters of the Department of the Missouri, which covers 80 acres. The Union Pacific rly. has extensive workshops, and here, also, is one of the best equipped plants in the world for the smelting of gold, silver, copper, lead, and zinc. Other industries include meat-packing and the manufacture of motor vehicles. Settled in 1854, Omaha was chartered as a city in 1857, and from its settlement down to 1867 was the state capital. South Omaha, until then an independent city, was incorporated with Omaha in 1915. Population (1950) 251,117.

**Omaha Beach.** Operational code name given at the time of the Allied invasion of W. Europe, June, 1944, to the stretch of beach between Port-en-Bessin and the Vire river, in Calvados dept., France. Here the U.S. 5th corps landed on June 6. The troops met with the strongest opposition experienced on D-day, as the Germans, although in ignorance of the impending assault, had chosen that time and area to hold an anti-invasion exercise.

**Oman, MUSCAT AND.** State of Arabia. It stretches for about 1,000 m. along the coast of S.E. Arabia, being bounded on the land side by the desert. Its area is about 82,000 sq. m., and the pop. about 550,000, chiefly Arabs, some with negro blood. Much of the surface is mountainous, reaching 9,000 ft. in the Jebel Akhdar, but there are a coastal plain and an inland plateau. The chief products are dates and other fruit. Muscat is the capital, and Matrah the biggest town. In 1741 an Arab chief, having seized Muscat, called himself imam or ruler of Oman, and his descendants have since kept their authority. The area under their rule has varied considerably, having been especially extensive about 1800, when it included part of E. Africa. The government of British India, which had a resident at Muscat, found it necessary from time to time to interfere in the affairs of Oman, the integrity of which was reaffirmed by Great Britain in 1951.

**Oman, GULF OF.** N.W. extension of the Arabian Sea. It lies between Oman, S.E. Arabia, and Makran, Persia. It leads to the



N.W. through the Strait of Ormuz to the Persian Gulf, and is over 200 m. wide at its entrance.

**Oman**, SIR CHARLES WILLIAM CHADWICK (1860-1946). British historian. Born in India, Jan. 12, 1860, and educated at Winchester and New College, Oxford, he became a fellow of All Souls, devoting himself largely to military history. In 1891



Sir C. W. Oman,  
British historian  
Russell

appeared his Warwick, the King-maker, and in 1898 his History of the Art of War in the Middle Ages. His History of the Peninsular War, 5 vols., 1902-14, cannot rival Napier in style and life, but it corrects some errors made by the earlier writer. Oman also wrote Wellington's Army, 1912, and popular Histories of Greece, England, and Europe. From 1905 he was Chichele professor of modern history at Oxford until his retirement in 1946. He was M.P. for Oxford university 1919-35, and knighted in 1920. He died June 23, 1946. His daughter, Carola Oman, was also known as a historian.

**Omar** (d. 644). Mahomedan caliph. One of those who were attracted to Mahomet, he became a leader of the new faith. In 634 he succeeded Abu Bekr as caliph, and held that position for ten years before being murdered by a slave. Omar carried on a warlike policy, bringing Palestine, Syria, and Egypt under his rule and crushing the Persians. He also ordered the internal affairs of the caliphate and was the first to bear the title Commander of the Faithful. The Mosque of Omar at Jerusalem, which he is said to have built to hold the rock from which Mahomet ascended to heaven, perpetuates his name. See Jerusalem.

**Omar Khayyám**, HAKIM (c. 1071-1123). Persian poet, astronomer, and mathematician. Born at Nishapur, Khorassan, he is said to have studied under the imam Mowaffak with Hassan-al-Sabbah, later founder of the secret sect of Assassins (q.v.), and Nizam-al-Mulk, who became vizier of Malik Shah. Khayyám means tent maker, which was perhaps the trade of his father. Omar helped to revise the Persian calendar, compiled astronomical tables, and wrote on mathematics. In Europe he was chiefly known as author of a work on algebra until attention

was drawn to his value as poet by the rendering into English, by Edward FitzGerald (q.v.), of part of his Rubáiyát (q.v.) or quatrains. These have been variously interpreted as praise of love and wine and of making the best of the present world because it is the human all-in-all, and as a Sufiite allegory in which wine is an emblem of God. As rendered by FitzGerald, the Rubáiyát is frankly an expression of hedonism touched with a certain melancholy that attunes with western as well as eastern pessimism.

Though much of it is mystical, there runs through it a strain of protest against bigotry which caused the poem to be judged heretical by some Mahomedans. Consult Life, J. K. M. Shirazi, 1905; O. K. and His Age, O. Rothheld, 1923.

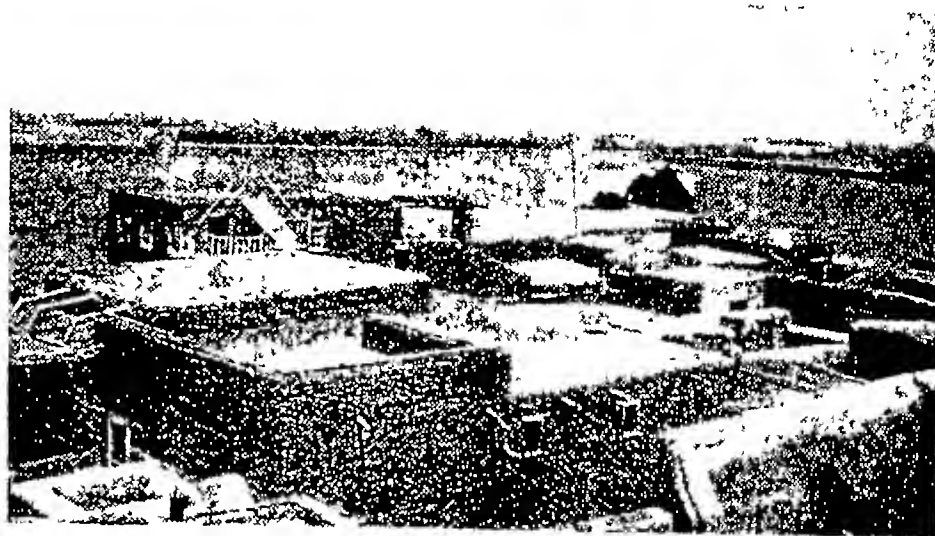
**Ombre**. Card

game. Popular at the end of the 18th century, it is of Spanish origin, the name Ombre signifying the Man. It is played by three persons with a pack of 40 cards, the 8, 9, and 10 of each suit being thrown out. The peculiarity of the game is that cards have different values when forming the trump suit; and that certain black cards are trumps even when the trump suit is a red one. The game has a nomenclature of its own, Ace of spades (invariably the highest trump card) being *spadille*; 7 of hearts or diamonds, *manille*; Ace of clubs, *basto*; Ace of a red trump suit, *ponto*.

Nine cards are dealt to each player, three at a time, the remainder forming the stock or *talon*. The player on the dealer's right is the *ombre*, who plays against the combined efforts of the other two, as in three-handed solo. The *ombre* has the naming of the trump suit and also the privilege of changing any of his cards for those in the *talon*. If he is satisfied with his cards, and thinks he can make the majority of the tricks, he says "I play." The player on his right has the chance of calling over him and becoming the *ombre* if he decides to play from his original hand (termed *sans prendre*); or should he pass, the third can do so. If the *ombre* discards, the other players have the same privilege. Tricks are made as in a solo call. If the *ombre* makes all nine tricks

he scores a *vole*, and is paid a larger stake. There is a classic description of a hand at ombre in Pope's Rape of the Lock.

**Omdurman**. City of the republic of Sudan. Situated on the left bank of the Nile, facing Khartum, and stretching for 7 m. along the river, it is the headquarters of the chief native traders of the Sudan, and an important native mart. As the resting place for pilgrims from the Western Sudan on their way to Mecca it was venerated by the Mahomedan tribes of North-Central Africa. During the regime



Omdurman, Sudan. House of the Khalifa Abdullah el Taashi

of the Mahdi (q.v.) this old dervish capital became the chief place in his empire and rallying place for his forces. His tomb (destroyed by Kitchener's men 1898, restored 1947) is in the centre of the city. Pop. 125,300.

**Omdurman**, BATTLE OF. Fought between an Anglo-Egyptian army and the forces of the Khalifa Abdullah, Sept. 2, 1898. In the final phase of the Sudan Campaign, 1896-98, Sirdar Sir Herbert Kitchener's striking force of 25,800 men of all arms supported by 10 gunboats advanced up the Nile to within 5 m. of the dervish capital before encountering the full might of the enemy prepared to give battle on the Kerreri plains. While the gunboats went ahead and shelled the city's defences, Sept. 1, the sirdar's troops took up station for the night within a crescent-shaped zareba facing W. and backed by the river, ready for immediate action. At 6.45 a.m., Sept. 2, the khalifa launched a massive frontal attack, led by Osman Azrak, combined with an attempt to outflank the Anglo-Egyptian right through the Kerreri hills, but by 8 a.m. this dual onslaught was broken.

At once Kitchener decided to advance and seize Omdurman before the dervishes could return there, and at 9.15 a.m. his entire force was moving south along the Nile bank. Foresceing such a

possibility, the khalifa had withheld 15,000 picked warriors behind the nearby Jebel Surgham and, as the Anglo-Egyptians approached the slopes of this hill, flung the whole weight of these reserves upon them. The sirdar wheeled to meet the threat, and the desperate fighting which ensued intensified as a further assault developed from the Kerreri hills. Col. Hector MacDonald's 1st Egyptian and Sudanese brigade in the rear (later reinforced by the Lincolnshire regt.) bore the brunt of this, and fought a brilliant action, repulsing dervish attacks on two fronts. Soon the superior fire-power of the Anglo-Egyptians' weapons told, and the mile-long Anglo-Egyptian line surged forward: by 11.30 a.m. the khalifa's defeated army was being driven into the desert. That afternoon, Kitchener led his battle-weary troops into the streets of Omdurman. The Nile Expeditionary Force's losses were 20 British officers and 462 men; 9,700 dervishes were killed, 10,000 wounded.

It was in the battle of Omdurman that the 21st Lancers, among them Lieut. Winston Churchill, made what has been called the last classic cavalry charge in the history of warfare; the dervishes held their ground, and the Lancers had to cut their way through with heavy losses. See *Anglo-Egyptian Sudan: Sudan Campaign: Khalifa, etc. Consult The River War*, W. S. Churchill, 1899.

**Omen** (Lat.). Phenomenon observed as a means of divination. The practice of observing omens is widespread, and was elaborated into systems by the Babylonians, Greeks, Etruscans, and Romans. The Romans observed lightning, the flight and feeding of birds, and the meeting with various animals. Omens were interpreted by the augurs and haruspices, and were especially looked for at sacrifices, e.g. by inspection of the entrails of the victim, and from chance utterances of the bystanders, who were enjoined to speak no ill-omened words. Words of ill-omen might be countered by a ready retort.

**Omeo.** Agricultural and mining town in a dairy farming district on Livingstone Creek, Victoria, Australia. The town, 84 m. N. of the rly. at Bairnsdale, is a tourist centre for the grand mountain scenery of the Australian Alps, and is snowbound in winter. There are mineral and marble deposits, and mining interests are active. Settlement dates from 1835. Pop., town, 600; dist., 2,700.

**Omish.** Yugoslav name of a part of the Adriatic described under its Italian form *Almissa*.

**Omniads, OMMAYADS, OR UM-MAYADS.** Dynasty of caliphs. Founded by Moawiya (c. 610-80), with the capital at Damascus, the dynasty lasted until 750, when it was replaced by that of the Abbassides (*q.v.*). The last of the Omniads, Abd-ur-Rahman I, made his way to Spain and founded another Omniad dynasty at Córdoba, which existed until 1031, when it ended with Hisham III.

**Omnibus** (Lat., for all). Public conveyance, carrying passengers for hire, over a regular route, taking them up or setting them down, usually at fixed points. For fuller details and illus. see *Bus*, the form to which the word has been shortened in common speech. The term was also formerly used for a large box in a theatre which was let out on subscription to a group of patrons (*cf.* *A Row in an Omnibus*, in *The Ingoldsby Legends*).

In the 1920s the word came into use again to describe, by false analogy (false, because the intention was to suggest large size rather than universal appeal), a single volume containing several associated books: e.g. *The Forsyte Saga*, by Galsworthy, published 1922, which comprised within a single book the reprint of three novels and two short stories.

**Omphacite.** In petrology, a pale green variety of pyroxene (*q.v.*). See *Eclogite*.

**Omphalē.** In Greek legend, wife of Tmolus, a Lydian king, whose kingdom she ruled after his death. When Hercules was condemned to a period of slavery as a punishment for the murder of Iphitus, Omphalē bought him, and the hero and the queen became deeply enamoured of each other.

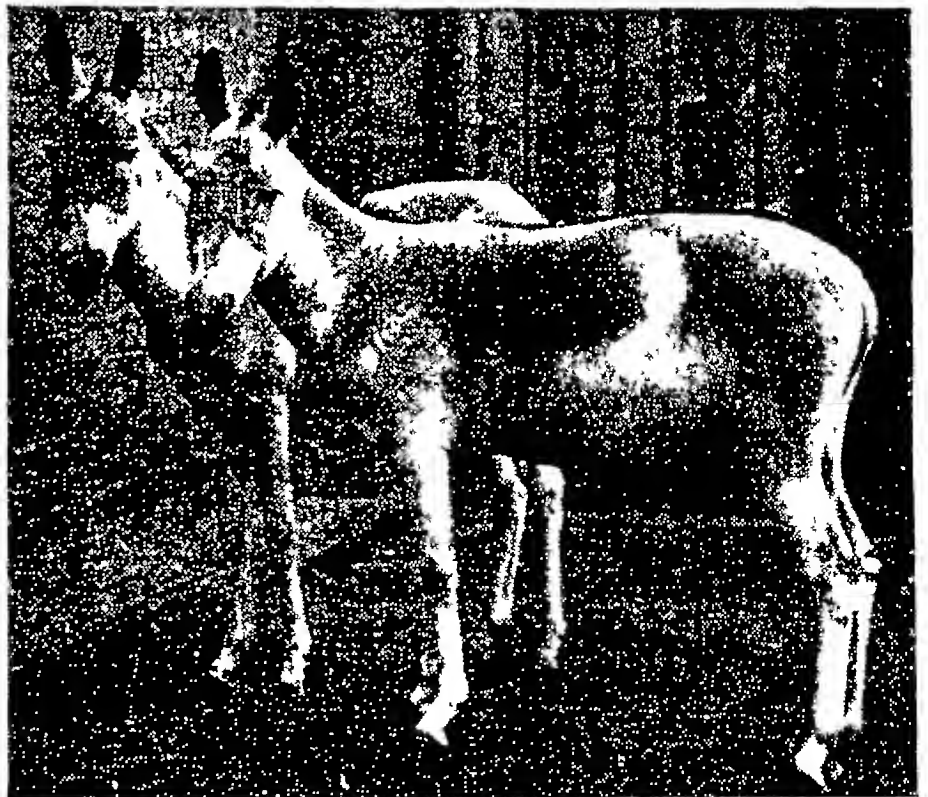
**Omsk.** Town of W. Siberia, R.S.F.S.R., capital of a region of the same name. It is on the right bank of the Irtysh at its confluence with the Om. A fort was established here in 1716 to protect Russian settlers from Kirghiz raids. After the revolution of 1917, Koltchak in 1918 declared himself dictator of Siberia at Omsk; and the town was the scene of fierce

fighting during the civil war. An important junction on the Trans-Siberian rly., it has sawmills, tanneries, flour mills, factories making agricultural machinery. Pop. (est.) 450,000.

Omsk region formerly stretched from the Kara Sea to the Kazakh S.S.R., but in 1944 was reduced to a roughly rectangular district N. of the Irtysh r., area 53,800 sq. m., pop. (est.) 1,500,000. In the N. it is forested, with flax-growing in clearings; fur trapping and lumbering are carried on. Centrally dairy farming is important; in the S. sunflowerseed, wheat and other grains, meat and wool are produced.

**Ona.** People of eastern Tierra del Fuego. Akin to the Patagonians of the mainland, they were distinguishable from the other Fuegian groups (Alakaluf and Yamana) physically and by their wandering way of life, afoot instead of in canoes. Determined hunting by the incoming sheep raisers, aided by the ravages of disease, brought about their extinction in the present century.

**Onager.** Local breed of wild ass occurring on the steppes of W. and central Asia. It differs from the kiang and the African wild asses in its smaller size, sandy-coloured hair, shorter legs, and narrower ears. It has a black



Onager. Specimens of this Asiatic breed of wild ass

stripe down the centre of the back, and occasionally it is striped on the shoulders and legs.

**Onagraceae.** Botanical family consisting chiefly of herbs, most of them native to the temperate regions. They have regular flowers, made up of a two- or four-lobed calyx and two or four petals. The fruits are seed-capsules or berries, as a rule edible. Well-known genera are fuchsia, evening primrose (*Oenothera*), and willow-herb (*Epilobium*).



**Oncidium.** Extensive genus of epiphytes of the family Orchidaceae, natives of tropical America and the West Indies. With a few exceptions, they have pseudobulbs, from which the leaves proceed. As a rule the flowers are large and showy, borne in sprays or clustered in spikes, but a few have solitary long-stalked flowers.

**Onega.** River in the N. of European Russia. Rising in Lake Lacha, it flows N.E. and then N.W. into the Gulf of Onega. In length about 245 m., it runs parallel with Lake Onega, which lies about 200 m. W. The Gulf of Onega is an arm of the White Sea, with a length of 80 m. At the point where the river enters the gulf is the town of Onega.

**Onega.** Lake of N.W. Russia, the second largest in Europe. It is in the Leningrad region of the R.S.F.S.R. and the Karelo-Finnish S.S.R., between the White Sea and Lake Ladoga, with which it communicates by means of the Svir. It is also connected by the Vytegra with the Mariinskaya canal-system, and the Onega (now Stalin) Canal has been constructed along its S. shore to overcome difficulties of navigation. Its length N.-S. is 145 m. and average breadth 40 m. It contains numerous islands and an abundance of fish. In 1919 fighting took place around Lake Onega between the Allies and the Bolsheviks (*see* Murmansk Expedition). Finnish forces reached the W. shores shortly after Finland declared war against Russia in 1941, but they were not in great strength, and Russian rly. traffic to Murmansk was not seriously hindered.

**Onehunga.** Town and port of North Island, New Zealand. On Manukau Harbour, it is the W. outlet for Auckland, 7 m. away. Woollen mills, shipping, and the export of timber and farm produce are its chief industries. Pop. (1951) 16,968. *Pron.* O-nee-hunga.

**Oneida.** Lake of New York, U.S.A. It lies about 12 m. N. of Syracuse, and is 24 m. long and 5 m. broad. The Oneida river drains it to the Oswego river, a feeder of Lake Ontario. Sylvan Beach, on the E. side of the lake, is a favourite holiday resort. The town of Oneida stands on Oneida Creek, 26 m. E. of Syracuse, in Madison co. Chartered as a city in 1901, it specialises in furniture. Pop. (1950) 11,325. *Pron.* o-needa.

**Oneida Community.** Society founded in Vermont, U.S.A., as the Bible Communists (*q.v.*), by John

Humphrey Noyes (1811-86), restarted at Oneida (*v.s.*), N.Y., in 1847. It had a religious basis, Noyes alleging N.T. authority for the doctrine that selflessness could be attained by holding all things in common. Even marriage was not a permanent relation in the community, but Noyes expressly disclaimed free love doctrines. Government was carried on by a system of mutual criticism. In deference to outside opinion the Oneida theory of marriage was given up in 1879, the community was dissolved, and in 1881 it was reorganized as a cooperative limited company.

**O'Neill, EUGENE GLADSTONE** (1888-1953). American dramatist. Son of an actor, he was born in New York.

Oct. 16, 1888, and educated at Princeton and Harvard. He spent two years at sea, and worked as a journalist and actor before writing the one-act play, *Thirst*, 1914. *Beyond the Horizon*, his first full-length play, 1919, won the Pulitzer Prize. *The Emperor Jones*, 1921, and *Anna Christie*, 1922, brought him international fame. Then came mystical and semi-symbolical pieces, *e.g.* *All God's Chillun Got Wings*, 1924; *The Great God Brown*, 1925. A play of passion, *Desire Under the Elms*, 1924, was at first banned from public performance in the U.K. In *Strange Interlude*, 1927, and *Mourning Becomes Electra*, 1931—O'Neill's most ambitious pieces—the characters speak their thoughts. Each was filmed, as was *Anna Christie*. O'Neill's innovations in technique limited his appeal; but in 1936 he received the Nobel prize for literature. He died at Boston, Mass., Nov. 27, 1953.

**O'Neill, SHANE** (c. 1530-67). Irish chieftain. Son of Con O'Neill, 1st earl of Tyrone (c. 1484-c. 1559), he was excluded from the succession by his father in favour of Matthew, his brother, possibly illegitimate, whom he murdered in 1558. He resisted the government of the earl of Sussex, but was recognized by Elizabeth I as heir to Tyrone, visiting London in 1562. His remaining years were spent in fierce wars and harryings in the N., chiefly against the Scots settlers in Antrim and the O'Donnells. With a traitor's price on



Eugene O'Neill,  
American dramatist

his head, he was murdered, June 2, 1567, by the O'Donnells, whom he defeated at Ballycastle in 1565.

**Onesimus.** Christian convert. He was a slave who ran away from Philemon at Colossae and made his way to Rome. There he met S. Paul, who converted him to Christianity and sent him back to his master with a letter, the Epistle to Philemon (*q.v.*), and also mentioned him when writing to the church at Colossae.

**One-Step.** American dance, popular also in England, where it was introduced about 1910, and in France. In the U.S.A. it was also called the Castle Walk, after its inventor, Vernon Castle. It is virtually a running walk, performed to rag-time music.

**One Thousand Guineas.** Second of the five classic English horse-races. It is for three-year-old fillies, and is run annually at Newmarket over the Rowley mile on the Friday of the first spring meeting. The race was founded 1814.

**Ongar.** Market town of Essex, England, in full Chipping Ongar. It stands on the Roding, 23 m. N.E. of London. It was scheduled as a "new town" after the Second Great War, but the project was abandoned. Traces remain of a castle which stood here in the Middle Ages. Livingstone was trained for the ministry at Ongar, which has associations with Isaac Taylor. Market day, Sat.

On the opposite bank of the Roding is a suburb, High Ongar.

**Onges.** Pygmoid Andamanese tribe living relatively undisturbed on Little Andaman island, Bay of Bengal.

**Onion** (*Allium*). Hardy bulbous plant of the family Liliaceae. The plants in nature are peren-



Onion. Two useful varieties: Ailsa Craig (left) and Rousham Park

ennial, but edible onions and leeks are raised annually from seed. *A. cepa*, the parent species of the garden onion, is native to Asia.

The onion requires a light, loamy soil, richly manured. The seed should be sown in rows about 12 ins. apart early in spring, covered only lightly, and the surface of the soil beaten down hard and firmly. As soon as the young plants show themselves, the top-soil should be

dressed with a dusting of soot and nitrate of soda, and the onions should be thinned out to about 6 ins. apart, the thinnings being useful for salads. At the end of the summer the ripened onions should be lifted from the ground and hung in a shed, or spread on a dry floor. Care must be taken not to allow damp to reach them. Successional sowings may be made at any time up till Aug. in order to provide for fresh winter crops.

Of the onions grown outside the British Isles, the Tripoli, Madeira, and Brittany varieties are the most popular in Britain. They are more delicate in flavour and less coarse of texture than the better known Spanish onion. The usual method of propagating onions is by seed from the top growth of bulbs which are left in the ground to ripen, and of which 10 lb. to the acre should result in a crop of 35-40 tons.

**Onions**, OLIVER (b. 1873). British writer. Born at Bradford his real name being George Oliver, he became a journalist and black-and-white artist, contributing to many newspapers and magazines. His first book, *The Compleat Bachelor*, appeared in 1900, but it was the trilogy of novels of London, eventually collected in 1926 as *Whom God Hath Sundered*, which established his reputation as a master of atmosphere and a writer of impeccable prose. His ghost stories, collected into one volume in 1935, also secured a wide audience. Later works included *The Italian Chest*, 1939; *The Story of Ragged Robin*, 1945; and *Poor Man's Tapestry*, 1946 (awarded the James Tait Black memorial prize). Onions married Berta Ruck, a writer of popular light fiction.

**Only Way**, THE. A romantic drama founded by Freeman Wills and Frederick Langbridge on Dickens's *A Tale of Two Cities* (q.v.). Produced Feb. 16, 1899, at the Lyceum Theatre, London, it had a run of 167 continuous performances. The play laid the foundation of Sir John Martin-Harvey's success as a popular romantic actor. See Martin-Harvey, Sir John.

**Onnes**, HEIKE KAMRELINGH (1853-1926). Dutch physicist. Born at Groningen, Sept. 21, 1853, he was appointed in 1882 professor of experimental physics at Leyden. He died Feb. 21, 1926. Onnes, who received the Nobel prize for physics in 1913, is known particularly for his work on thermodynamics, his liquefaction of helium, 1908, and

his discovery of superconductivity (the virtual disappearance of electrical resistance in metals at very low temperatures).

**Onomatopoeia** (Gr. *onoma*, name; *poiern*, to make). Philological term for the formation of words in imitation of external sounds, whether uttered by living creatures or produced by inanimate objects. Instances are bang, bow-wow, buzz, cuckoo, frou-frou, mew, puff, quack, whir, in which the sound is an echo to the sense (hence the term echosm). Older etymologists regarded this method as one of the chief factors in word-formation in the earliest stages of a language, but it is now generally recognized that its influence can only have been limited. See Philology; Phonetics.

**Onomichi**. Town of Japan, in Honshu. It is a shipping centre on the coast of the Inland Sea, 191 m. by rly. from Shimonoseki, on the route to Kobe. The town lies along a narrow coast strip, backed by a high hill opposite the island of Mukai, which protects the harbour. There are 48 Buddhist temples, of which the finest is Senko-ji. Matting, both plain and figured, and saké are the chief articles of trade. Steamers connect the town with Tadotsu on Shikoku. Pop. 42,000.

**Onslow**, EARL OF. British title borne since 1801 by the family of Onslow. This goes back to Roger, lord of Ondeslowe, Shropshire. His descendant Richard Onslow (1528-71), was Speaker of the house of commons in Elizabeth's time. A later Richard (1601-64) was knighted, served in the Long and Protectorate parliaments and in the army, and sat in the house of lords called by Cromwell. His son, Sir Arthur (1621-88), became a baronet, and the latter's son, Sir Richard (1654-1717), was chosen Speaker, as was his nephew, Arthur (1691-1768), who filled that position during 1728-61. Sir Richard was made Baron Onslow in 1716, and the 4th baron, an official of the royal household, was made earl of Onslow in 1801. William, the 4th earl (1853-1911), was a Conservative politician who was governor-general of New Zealand, 1889-92. Richard, the 5th earl, was parliamentary secretary to the ministry of health 1921-23, under-secretary for war from 1924 to 1928, and paymaster-general from 1928 to 1931. He died June 9, 1945, and was succeeded by his son William Arthur Bampfylde Onslow (born June 11, 1913). The earl's seat is Clandon

Park, Guildford, and his eldest son is called Viscount Cranley.

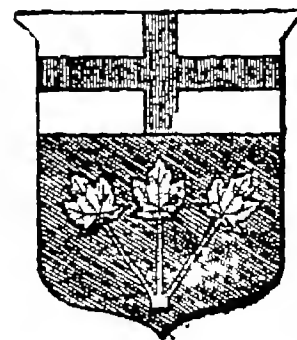
**Onslow Bay**. Broad bay on the S.E. coast of North Carolina, U.S.A. It extends W. from Cape Lookout, and flowing into it are the New, White Oak, Newport, and other rivers.

**Ontake**. Mountain peak in the Japanese Alps. The most frequented sacred mountain after Fujiyama, its alt. is 11,000 ft., and the summit is marked by a Shinto shrine dating from 1385. In summer crowds of pilgrims make the ascent, which, like that of Fuji, is divided into 10 stages. A sulphur crater and mountain tarns occur near the summit, which resembles that of Fuji in shape.

**Ontario**. Smallest and most easterly of the five Great Lakes of N. America. Its length is 193 m., width 53 m. at the broadest part, area 7,540 sq. m., maximum depth 774 ft., and average depth 412 ft. With a surface 246 ft. above sea level, it occupies a shallow depression in the earth's crust. It is fed by the Niagara river from Lake Erie, and is known at its N.E. outlet to the St. Lawrence as the Lake of a Thousand Isles. The chief feeders are the Genesee, Oswego, Black, and Trent rivers. An important section of the St. Lawrence and Great Lakes navigation, the lake is connected with Lake Erie by the Welland Canal, with the Ottawa river by the Rideau Canal, and with the New York State barge canal system by the Oswego Canal; shore ice interferes with navigation in the winter.

Called Lake St. Louis by Champlain, it was known to the French settlers in Canada as Lake Frontenac. See Canada; Great Lakes.

**Ontario**. Prov. of Canada. Its area is 412,582 sq. m., of which 49,300 are covered by water. The

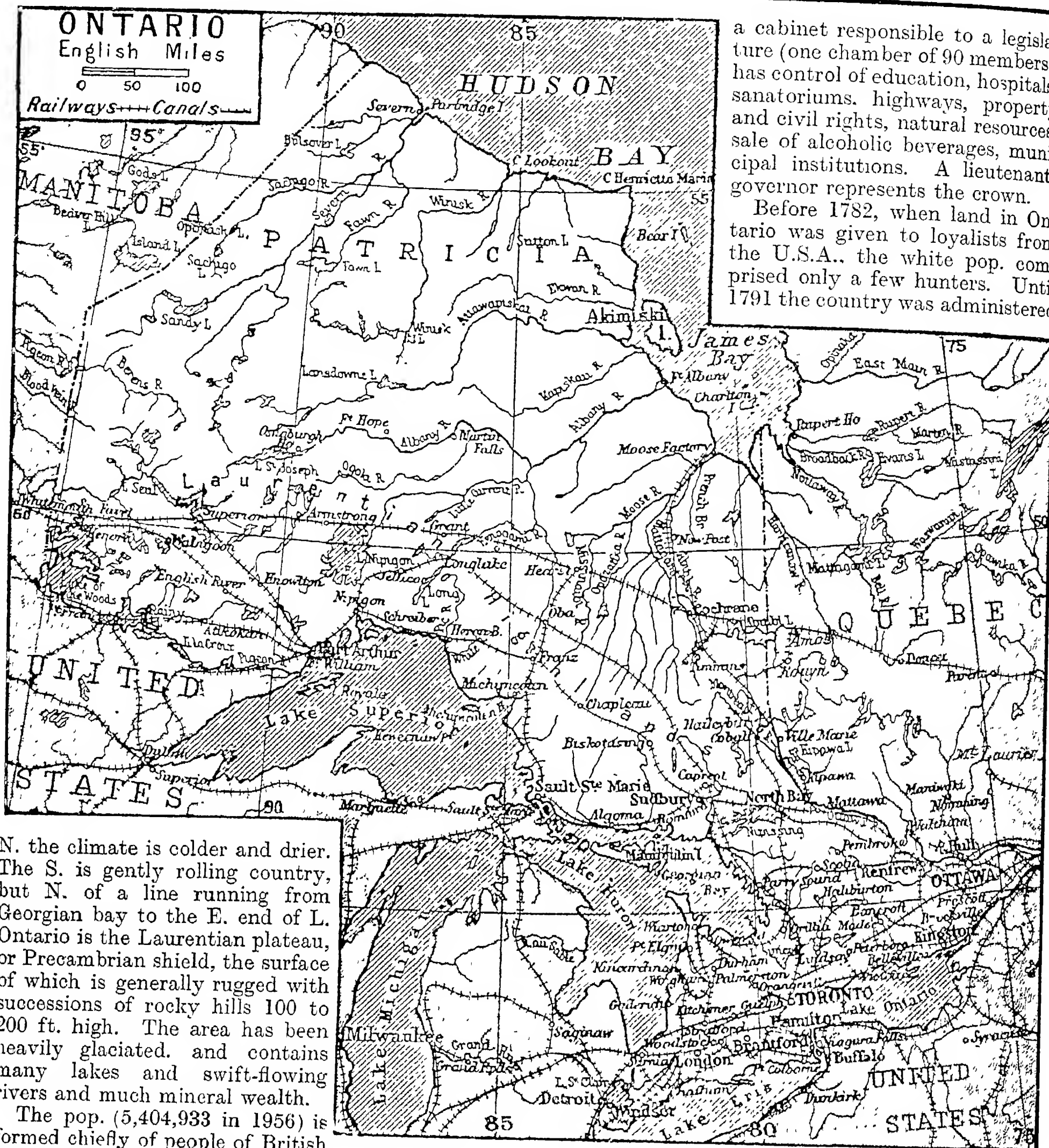


Ontario arm

prov. consists of two parts—the older, smaller, and more settled Lakes pen., which is something like a triangle between L. Huron, the Ottawa river, and Lakes Erie and Ontario; and the newer and larger part extending north to Hudson bay and west to Manitoba. The prov. capital is Toronto.

The climate is varied over this region extending 1,050 m. from N. to S. The Great Lakes exercise a moderating influence on the climate in the S. Mean annual temp. at Toronto is 45.8°. In the





a cabinet responsible to a legislature (one chamber of 90 members), has control of education, hospitals, sanatoriums, highways, property and civil rights, natural resources, sale of alcoholic beverages, municipal institutions. A lieutenant-governor represents the crown.

Before 1782, when land in Ontario was given to loyalists from the U.S.A., the white pop. comprised only a few hunters. Until 1791 the country was administered

N. the climate is colder and drier. The S. is gently rolling country, but N. of a line running from Georgian bay to the E. end of L. Ontario is the Laurentian plateau, or Precambrian shield, the surface of which is generally rugged with successions of rocky hills 100 to 200 ft. high. The area has been heavily glaciated, and contains many lakes and swift-flowing rivers and much mineral wealth.

The pop. (5,404,933 in 1956) is formed chiefly of people of British stock: people of French stock constitute about 10 p.c. of the pop. The prov. has many attractive parks and lakes. The leading industries are manufacturing, agriculture, mining, and forestry, in that order. Ontario's manufacturing output is roughly equal to that of the rest of the dominion.

About 22.3 million acres are farmed, of which some 9 million acres are devoted to field crops. Mixed farming with a trend toward dairying is predominant, especially along the N. shore of Lakes Erie and Ontario. The prov. produces a greater value of minerals than any other part of Canada. Gold, nickel, and copper are the most important metals produced; iron, silver, lead, zinc,

and magnesium are also mined. Lumbering is very important in N. Ontario, where the manufacture of newsprint from pulpwood bulks large. Fishing is also important. The prov. is well served by rly., water, and air transport.

Electric power from Niagara and numerous other waterfalls is available. The hydro-electric power commission of Ontario generates most of the power. Appointed an independent, self-sustaining, cooperative organization 40 years ago by the prov. govt., the commission now owns and operates 47 hydro-electric power developments in different parts of the prov.

Ontario sends 83 members to the commons, 24 to the senate, at Ottawa. Prov. govt., managed by

from Quebec, but in that year a separate prov. called Upper Canada (or sometimes Canada West) was formed. The monopoly of political power by a small group called the family compact, and the distribution of public lands, involving the clergy reserves, brought about a rebellion in 1837. As a result, by the Act of Union, 1841, Upper Canada was united to Lower Canada (Quebec), and responsible govt. was introduced in 1849. When the British N. American colonies of Upper and Lower Canada, Nova Scotia, and New Brunswick were united in the Dominion of Canada by the British North America Act of 1867, Upper Canada became the prov. of Ontario.

J. S. P. Armstrong, Agt.-Gen

**Ontogeny.** The development of the individual plant or animal. The term is applicable, in a structural sense, especially to organisms which being initiated as single cells grow by cell division and differentiation into the tissue masses that constitute the organs of the ultimate entity. Early cell divisions usually occur according to a pattern characteristic of the type, and are often spatially related to the position of structures in contact with the dividing cells or to the direction of an external stimulus impinging on them. In later stages of ontogeny, the products of one part of an organism may influence the manner of development of other parts. The course of ontogeny thus primarily depends on the hereditary endowment, and takes place in a coordinated manner, which may, however, be subject to the effect of environment.

**Ontology** (Gr. *logos*, theory; *ontos*, of that which is). The science of being as being, the investigation of its properties and relations, and of the ultimate principle of the physical and intellectual world. It is sometimes used as synonymous with metaphysics, of which, however, it is in reality a part. The ontological proof of the existence of God concludes, from the conception which we ourselves have of an infinitely perfect being, that such a being must necessarily exist. See Metaphysics.

**Onus** (Lat., burden). Legal term generally used in the phrase *onus probandi*, burden of proof. The rule is that he who affirms must prove; and in the course of a case the onus of proof often shifts from one party to another. Thus in an action for libel, with a defence denying publication and pleading that the libel is true, first the onus is on the plaintiff to prove that the defendant published the words complained of, and that they are defamatory of him, the plaintiff. Then the onus shifts to the defendant; and it is for him to prove that the words are true.

**Onychia** (Gr., *onyx*, finger-nail). Inflammation of the bed of the nail. It may be due to direct infection, or may develop in the course of diseases of the skin such as eczema. It is difficult to cure, but penicillin and the sulpha group are useful.

**Onyx.** General term applied to riband agates characterised by well-defined alternate rings of pure milk-white with bands of other colours. If the tint of the secondary rings is flesh colour, the agate is known as chalcedony-onyx; if red, carnelian-onyx; if green, sardonyx.

All these are utilised for intaglios (incised) and cameos (relief) carving for jewelry.

Onyx opal is a natural stone built up of alternate layers of precious and common opal. Onyx marble, from Mexico, and onyx alabaster, from Egypt, are handsome forms of stalactite marble, mostly calcite. They are sometimes used for ornamental purposes.

**Oolite** (Gr. *ōōn*, egg). In geology, (1) term used for a texture observed in some limestones, the rock being made up of small spherical or elliptical grains of calcium carbonate which look like fish roe, from which the term is derived. The texture results from precipitation of calcium carbonate around a small nucleus such as a sand grain, in shallow water where the grain is rolled back and forth by waves or current. Oolitic deposits are now being formed off the Bahamas and Florida; others are found on the shores of the Red Sea, where at low tide the oolitic grains are dried and drifted by the wind into dunes.

(2) Name given to the upper and middle divisions of the Jurassic system (upper and lower oolites) because the limestones present are characterised by oolitic texture. These rocks are valuable building stones. When they can be cut equally well in any direction they are termed freestones. Important beds have local names, Portland stone, Bath stone, etc. Iron ores of lower oolitic age showing similar texture are found in Northants. The two groups are highly fossiliferous, containing dinosaur remains in addition to ammonites and other shells. See Geology; Jurassic System; Rock. *Pron.* o-olite.

**Oology** (Gr. *ōōn*, egg). Branch of ornithology which deals with the eggs of birds. All birds' eggs are alike in the general arrangement of their contents and in the chalky nature of the shell; but differ widely in size, colour, and shape. The largest known egg is that of the extinct *Aepyornis* of Madagascar, which had a capacity equal to about two gallons, while the smallest are those of certain humming birds. See Bird; Egg colour plate; Embryology. *Pron.* o-ology.

**Oosphere.** The larger of two cells which unite during the sexual reproduction of many plants that form gametes of two sizes. An oosphere, like all gametes, is haploid, and differs essentially from the antherozoid or any other form of male gamete which fertilises it

in having a relatively large bulk of cytoplasm. It is usually non-motile, but often emits soluble material which attracts the male gamete chemotactically.

**Oosterbeek.** Village of the Netherlands. Lying 3 m. W. of Arnhem in Gelderland, it was the headquarters of the 1st airborne division in the battle for Arnhem (q.v.). On Sept. 17, 1946, there was unveiled a memorial erected by the Dutch people to British troops who fell in the battle. Near Oosterbeek is the cemetery in which most of them are buried.

**Oosterhout.** Town of the Netherlands, in the prov. of N. Brabant. It lies 5 m. N.E. of Breda, with which it has tramway connexion. Situated in flat agricultural country, it has a considerable trade in local produce. Industries are the manufacture of tiles and pottery, sugar-refining, and tanning. Pop. 15,107.

**Ootacamund.** Hill station of Madras state, India, headquarters of Nilgiris dist. It is about 75 m. E. by N. of Calicut, and is the finest hill station in India, being over 7,000 ft. in alt., and having a temperate climate, with night frosts in Dec. and Jan. Around the station, where eucalyptus and wattle grow in profusion, are the open, rolling downs of the Nilgiri Hills. Under British rule the Madras government sat here during the hot season; the government offices on Stonehouse Hill date from 1821, and Government House from 1876. Ootacamund was much used as a leave centre by British troops after service in Burma during the Second Great War. At Wellington, 7 miles to the south, was a British military convalescent centre. Pop. (1951) 41,370.

**Ooze.** Name given to deposits of mud on the ocean bed at great depths, composed mainly of the external skeletons of minute protozoa. The animals belong largely to the foraminifera. As globigerina is one of the commonest forms, globigerina ooze occurs frequently. These minute animals swarm near the surface as plankton, and as they die their skeletons sink. Globigerina ooze lies at depths above 2,000 fathoms, for calcareous skeletons will sink only so far before they dissolve. Below that depth siliceous skeletons of radiolaria only will persist, some down to 5,000 fathoms. See Foraminifera; Plankton.

**Opal.** In mineralogy, an amorphous (colloidal) variety of hydrated silica. It contains a variable



quantity of water, up to 10 p.c., and varies in colour from dark to pale yellow, red, blue, or green, the lighter colours being more common.

The mineral is most probably a dried-up gel and occurs in many ways: as deposits from siliceous waters at low temperatures in veins and thermal springs, from the weathering of different types of rock, or from the skeletons of minute marine organisms, *e.g.* radiolaria and diatoms.

The precious opal has been from time immemorial one of the best-known gems. It is a semi-transparent, semi-translucent stone, bluish or yellowish white as a rule, and showing a wonderful play of all colours of the rainbow as the light strikes it at various angles. This play of colour is due to the different water content of adjacent thin layers in the stone.

The chief producers of precious opal are New South Wales, S. Australia, Queensland, and Mexico. Opalescence is best brought out by giving the gem a rounded polished surface, and the loss of colour is due to the surface wearing, the stone being comparatively soft. The fire opal, a beautiful red stone, with yellow, or yellow and green reflections, is found in Mexico; as is the girasol, a bluish white opal, with red reflections. Hyalite (*q.v.*) is a glassy variety of the mineral without opalescence, and hydrophane is another variety of porous texture which becomes transparent on immersion in water. Menilite is a variety found in concretionary form, and is opaque grey. The common opal, which is not opalescent, occurs in a variety of colours from white to brown.

**Opata.** American Indian tribal division of Piman stock, in Sonora, Mexico. Embracing the Eudeva, Jova, and Teguma sub-tribes, they were more submissive than the Pima, and are thoroughly intermixed with other stocks. See Sonoran.

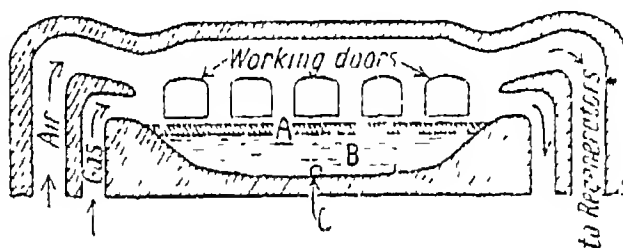
**Opava.** Czech name for a town of Czecho-Slovakia, in German Troppau (*q.v.*).

**Open Air Theatre.** Enclosure in Regent's Park, London. The theatre, established by Sydney Carroll (*q.v.*), was opened June 5, 1933, with a performance of Twelfth Night. It forms a pleasing natural setting for out-of-doors drama, especially Shakespeare. Performances are given throughout the summer months (under cover in bad weather), and are enhanced at night by flood-lighting. The theatre was closed during the

Second Great War, and re-opened in 1945. See *As You Like It* illus.

**Open City.** In wartime, a city declared by the government of a belligerent country to contain no military installations, and therefore to be immune from bombardment. Paris was declared an open city in 1940, and Damascus in 1941. The Italians declared Rome an open city in 1943, but as it remained the seat of the government and an important rly. centre, it was bombed by American aircraft.

**Open Hearth Furnace.** Regenerative, metallurgical furnace used chiefly for the melting and refining of steel. In steel-making, the furnace charge, which consists of pig iron, steel scrap, and fluxes, is melted on a shallow or "open" hearth to produce a liquid bath of large surface area, which facilitates refining. The furnace is approx. rectangular in section. The hearth is built of steel plate lined (1) in the acid process with silica bricks, on to which fine silica sand is fritted to give the working surface; (2) in the basic process usually with magnesite bricks, a dolomite-tar mixture forming the working surface.



**Open Hearth Furnace.** Diagram showing the main construction features. The liquid bath contains A, molten slag, and B, molten metal. C is the tap hole

The walls and roof of the furnace are usually of silica brick, and in basic furnaces a neutral course of chrome magnesite separates the acid walls from the basic hearth. The front wall of the furnace contains the working doors, through which the charge is introduced and additions made to the liquid bath. The back wall is plain, except for the tap hole through which the bath is poured at the end of the steelmaking process; in the smaller fixed furnaces the tap hole runs from the lowest point in the hearth, through the back wall to a launder, and is kept stopped up during the processing. The capacity of an average sized furnace is 50 to 70 tons; furnaces of capacity up to 100 tons are usually fixed. Larger furnaces are of the tilting type, with the tap hole above the bath level except when tilted.

The end walls contain the port blocks, through which the gas (or oil) and air necessary to generate heat are introduced. The blocks at each end are identical, one serv-

ing for the separate introduction of gas and air, while the burned gases pass out of the furnace through the other; every 20 or 30 min. the direction of the gas-air travel through the furnace is reversed. In order to attain the temp. to melt and refine the charge, regeneration is necessary to pre-heat the gas and air. Below, and slightly to the sides of the furnace, are two pairs of regenerator chambers, one pair connected separately to each port block. The hot, burned gases leaving the furnace are led from the exit port block through slag pockets, where slag and dust particles are deposited, to one pair of regenerators. Most of the sensible heat of these gases is here absorbed by the refractory checker brickwork; when the direction of the gas-air travel is reversed, this heat is transferred to the gas and air. The gas and air pass from their independent regenerators to the entry port block. The air is introduced into the furnace above the lighter gas to effect good mixing, while both gas and air ports are inclined downwards to direct the flame on to the charge in the hearth.

**Openshaw.** District to the S.E. of Manchester, England. A busy manufacturing area, it makes rly. rolling stock, has iron foundries, dyeing and chemical works, cotton factories, and engineering establishments, and is traversed by the Manchester-Stockport Canal. Pop. 23,240. See Manchester.

**Open Space.** A space upon which the erection of buildings is prohibited or restricted by law. Open spaces are: (1) royal parks and Royal Botanic Gardens, Kew; (2) village greens, which may be used by the inhabitants of the locality for recreation or games; (3) open spaces as defined by Act of 1906; (4) public walks, pleasure grounds, or recreation grounds laid out by local authorities under *e.g.* Public Health Acts; (5) places held by the National Trust; (6) commons; (7) land to which the public may go for air and exercise under the Access to Mountains Act, 1939. The minister of Agriculture and Fisheries may apply this Act to land which is mountain, moor, heath, down, or cliff. Any person may have access between one hour before sunrise and one hour after sunset. It is forbidden to light a fire; draw a vehicle; take a dog not under control; disturb animals, eggs, or nests; hunt or fish; commit wilful damage; leave gates open; deposit rubbish; or hold political meetings.

## OPERA THROUGH FOUR CENTURIES

Dyneley Hussey, author of *Great Composers of Opera*

*This survey of the origin and development of a great musical art-form is supplemented by articles on all the famous composers of opera from Monteverde to Britten. See also Music; Orchestra; Singing, etc*

An opera may be defined as a drama of which the text is wholly (or mainly) set to music and sung to the accompaniment of an orchestra with appropriate action, scenery, and costumes.

Although its origins may be traced back through the tragedies and comedies of Athens to the primitive religious ritual of pre-history, opera, as we understand it, is a musical form of comparatively recent creation—a product of the Renaissance in Italy. Even as the Italian painters and sculptors were influenced by the newly discovered or hitherto neglected examples of Greek and Roman art, so the poets and musicians at the end of the 16th century were stimulated by the Revival of Learning to attempt the creation of a contemporary equivalent of Greek tragedy. Fortunately their knowledge was insufficient, and no more than the artists did they achieve a mere reproduction of the antique. They created a new form of dramatic entertainment, to which they gave the title of *dramma per musica* or (later) *opera in musica*, the emphasis being on the drama.

These experiments coincided—else they could hardly have succeeded—with a new development in the structure of the art of music itself. Polyphony, which had been brought to its finest flowering in the sacred music and madrigals of Lassus, Palestrina, Byrd, and Victoria, was giving ground to a homophonic style in which a solo melody was supported by a harmonic accompaniment. Dramatic action could hardly be carried on solely by means of the interwoven counterpoint of several voices, though it may be remarked that Vecchi's delightful madrigalian comedy *L'Amfiparnaso* (1594) provides a successful exception to the rule. Orazio Vecchi was one of a number of Italian musicians who at the turn of the 17th century were concerning themselves with the creation of a musical drama.

The first opera proper was Jacopo Peri's *Dafne* with a text by Rinuccini, produced in Florence in 1597. The real prototype of the lyric drama was, however, Peri's *Euridice*, the first of a long line of operas on the theme of Orpheus and Eurydice, which was performed

at the marriage festivities of Henry V of France and Maria de' Medici, 1600. The experiments of the French poets and musicians of the "Pléiade," who sought to adapt to the setting of French poetry what they imagined to be the principles of Greek music, had a considerable influence upon the new declamatory style developed by the Florentine composers, and especially by Claudio Monteverde, a Cremonese in the service of the duke of Mantua, who in 1607 produced the first masterpiece of opera, *Orfeo*. In *Orfeo* and its successors Monteverde solved the fundamental problems of presenting a dramatic story in music, and established a balance between action carried on by means of recitative and the summing-up of the dramatic situation in extended lyrical movements.

The new form of entertainment soon established itself in Italy and, in the generation after Monteverde, developed that sharp division of the music into recitative and elaborate aria, which was to be characteristic of Italian opera down to the time of Rossini. Although in the early 18th century opera tended to become little more than a concert in costume with characters, usually taken from classical history, giving expression to high-flown sentiments in conventionally tragic situations, the style of recitative (*recitativo secco* in which the voice is accompanied by a keyboard instrument with a violoncello to sustain the bass of the harmony) therein developed is unsurpassed as a vehicle for the carrying on of a swift dialogue in music, as may be heard in the Italian operas of Mozart (1756–91).

### Commedia dell' Arte

In the meantime comic opera was also being developed alongside tragedy on the basis of the *Commedia dell' Arte*, whose farcical characters survive in a degraded form in the pantomime harlequinade and Punch-and-Judy show, and in a romanticised form in the ballet *Carnaval*, and in Leoncavallo's *I Pagliacci*. The chief contribution made to opera by the early comedies was the vocal ensemble. In the tragedies it was rare for the singers to be heard together even in a duet, while the chorus was mainly confined to the task of

pointing the moral in sententious couplets at the end of the drama, a function which it still fulfilled in the *opera seria* of the 18th century and, in a more flexible form, in Beethoven's *Fidelio* (1805). But in comedy the action could not very well be carried on without some kind of concerted ensemble, especially as the plot always hinged upon some misunderstanding between the characters. In *opera buffa*, therefore, the acts ended with concerted movements for all the characters—the *finale*, which was developed to such perfection by Mozart in his comedies, and which was transferred to tragic opera by the Italian composers of the 19th century.

### France and England

The history of opera down to the 18th century is largely the history of Italian opera. But both France and England produced during the 17th their own characteristic styles of opera. In France the emphasis was upon the just setting of the text, which makes the operas of Lully (1632–87) sound rather stiff and dull to ears not attuned to the precise inflexions of the French language, while Louis XIV's passion for dancing secured to the ballet an important place in French opera, which survived into the 19th century when both Wagner and Verdi had to provide full-length ballets for their operas, *Tannhauser* (1845) and *Otello*, when they were produced at the Opéra.

In England the suppression of the theatre under the Commonwealth oddly enough fostered the development of opera, since what might not be said was permitted to be sung. Nothing of lasting importance was, however, created until at the end of the century Henry Purcell produced his little masterpiece, *Dido and Aeneas* (1680), the only one of his works that fulfils his own definition of opera as "a story sung with proper action." The *Fairy Queen*, *King Arthur*, and the other "operas" of Purcell are spoken dramas with incidental music and elaborate masques at the end of each act.

In Germany still another characteristic form of opera was developed during the 18th century, the *Singspiel*, in which the action is carried on in spoken dialogue with songs and ensembles interspersed at appropriate moments. The earliest example familiar to us is *The Beggar's Opera* (1728). The comic operas of Arthur Sullivan (1842–1900) belong to the same category. The form was used by Mozart in his two German operas



Die Entführung aus dem Serail (Il Seraglio, 1782) and Die Zauberflöte (1791), and was developed in France as *opéra comique*.

Even more important contributions made by Germany were the successive reforms of Gluck in the 18th century and of Wagner in the 19th. The Age of Reason could not tolerate the conventions of opera as understood by composers like Scarlatti and Handel and the great theatre-poet Metastasio. The stimulus to reform came especially from Paris, the initiative being taken by J. J. Rousseau, among others. The new theory of opera was proclaimed in the famous preface to Gluck's French version of *Alceste* (1776). In effect, Gluck's practice was a reversion to the principles of Monteverde, which Gluck applied to the musical idiom of his own day. Similarly, if we cut away the vast quantity of philosophical verbiage in which he enveloped it, Wagner's operatic theory is fundamentally a revolt against the domination of opera by virtuoso singers and a return to the same principle of equilibrium between music and drama, though in practice his symphonic development of his musical material tended to concentrate the greater part of the interest in the orchestra.

#### Verdi and other Italians

While Wagner (1813-83) was constructing his vast dramas based upon old German legends in a musical style derived from the romantic operas of Weber and the symphonies of Beethoven and Schubert, his contemporary in Italy, Giuseppe Verdi (1813-1901), was slowly forging a style of his own. In this the voice was used as the chief vehicle of dramatic effect and emotional expression, as it had been used by Rossini (1792-1868), Donizetti (1797-1848), and Bellini (1801-35). But the orchestra was also gradually given a more highly developed musical rôle, until in the masterpieces of his old age, *Otello* and *Falstaff*, Verdi's music achieves a subtlety of colouring and expression unsurpassed in the history of opera.

At the end of the 19th century the development of orchestral technique and the reaction against romanticism produced the realistic or "verist" style of opera, represented in Italy by Mascagni's *Cavalleria Rusticana* (1890), Leoncavallo's *Pagliacci* (1892), and Puccini's *Tosca* (1900), and in France by such works as Charpentier's *Louise* (1900). In Ger-

many Richard Strauss carried the Wagnerian procedure to its logical conclusion in what are, in effect, one-act dramatic tone-poems (*Salome*, *Elektra*), before allowing his music to expand into a full-length operatic comedy, *Der Rosenkavalier* (1911).

#### Nationalism in Opera

The 19th century also saw the growth of nationalism in music, which resulted in the production of distinctive styles of opera upon local themes. In one sense, German opera from Weber to Humperdinck (including Wagner) is nationalist in inspiration. But the term is more obviously applicable to the works of the Russian composers Glinka (1803-57), Borodin (1834-87) Moussorgsky (1839-81) and Rimsky-Korsakov (1878-1908), and to the Czechs, Smetana (1824-84) and Dvorak (1841-1904), whose music is based upon Slavonic traditional melodies, and whose operas are based upon folk-stories or historical and patriotic legends. In the more sophisticated air of France, Bizet (1838-75) created a distinctively French type of opera, which differs from the cosmopolitan "grand" operas of Meyerbeer (1791-1864), Halévy (1799-1862), and Gounod (1818-93).

In England the revival stimulated by the music of Parry and Stanford during the last 20 years of the 19th century resulted in the production of numerous operas, among which those of Stanford (1852-1924) and Ethel Smyth (1858-1944) deserve mention, though they have so far failed to take a permanent place in the repertory. Later, characteristically English operas were created by Vaughan Williams, whose musical style is based upon folk-music and the polyphony of the Tudor period. In the 1940s a great success was scored both in England and abroad by the operas of Benjamin Britten, whose clever manipulation of an eclectic style is undeniably effective in the theatre.

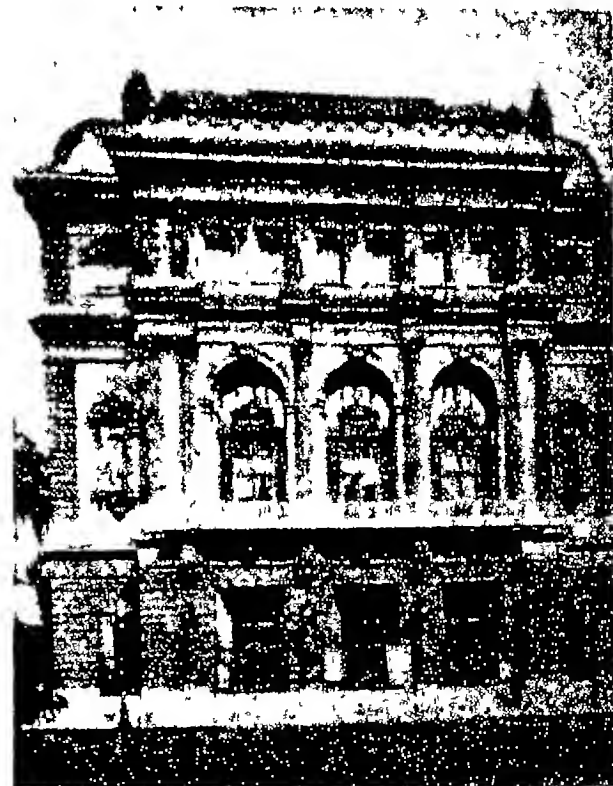
The history of opera is largely the story of a ceaseless interplay between the interests of the singers and the musical and dramatic proprieties. In Italy, where music means first and foremost *singing*, the voice has tended to dominate opera, while German composers, with their tradition of symphonic music and their usually more serious attitude towards the arts, have tended to concentrate upon the orchestra and upon a careful presentation of the drama in music, sometimes to the detriment of its value as entertainment. In

France, too, the respect for literature has led composers to concentrate upon the just setting of their texts to a degree that makes their operas peculiarly difficult to perform in any other language than French. A perfect equilibrium in this conflict between the several elements that go to the making of opera has rarely been achieved, those who have come nearest to success being Monteverdi, Mozart in his Italian comedies, and Verdi in the operas of his mature years.

**Bibliography.** Music and Nationalism, a Study of English Opera, C. Forsyth, 1915; The Opera, R. A. Streatfield, 1925; Monteverdi, H. Prunieres, 1926; Mozart, D. Hussey, 1928; Foundations of English Opera, E. J. Dent, 1928; Verdi, F. Toye, 1931; Rossini, F. Toye, 1934; Handel, E. J. Dent, 1934; Gluck, A. Einstein, 1936; Opera, E. J. Dent, 1940; Mozart, A. Einstein, 1947; Life of Wagner, E. Newman, 4 vols., 1933-47; Mozart's Operas, E. J. Dent, 1947; Verdi, D. Hussey, 1947; Great Composers of Opera, D. Hussey, 1948.

**Opéra, THÉÂTRE DE L'.** See Académie Nationale de Musique.

**Opéra Bouffe.** French comic opera, to be distinguished from the Italian *opera buffa*, in which the dialogue is sung as recitative. *Opéra bouffe* is lighter in texture than *opéra comique*; it flourished in France during the 19th century, its chief exponent being Offenbach.



Opéra Comique. Main entrance of this Paris theatre, one of the national theatres of France

**Opéra Comique.** In the classification of opera, one in which the dialogue parts are spoken, not sung. The plot is generally brought to a happy conclusion, but this is not essential, an example of the contrary being Bizet's *Carmen*. The *opéra comique* should not be confused with the English comic opera, which corresponds to *opéra bouffe* (v.s.).

The Opéra Comique is one of the national theatres of France, now situated in the Place Boieldieu, Paris. Founded in 1714, it had a struggle for existence against the rivalry of the Opéra des Italiens and the Comédie Française, and was suppressed from 1718-21 and 1745-52. In 1801 it merged with the former, and occupied several buildings until the present one was opened, 1898.

A London theatre called the Opéra Comique was opened in the Strand Oct. 29, 1870, for the performance of French plays. As the early home of the Gilbert and Sullivan operas, it disappeared when Aldwych (*q.v.*) was constructed in 1901-05.

**Opera Glasses.** Type of binocular telescope of small magnification, designed for use in theatres. See Field-glasses.

**Operation.** Military term signifying the conduct of a major action against an enemy, as distinct from a raid or reconnaissance. In the 20th century operations have usually received code names, some of the most important of the Second Great War being: Operation Dynamo, the British evacuation from Dunkirk; Operation Overlord, the Allied invasion of Normandy; Operation Torch, the Allied landings in N. Africa; Operation Strangle, the R.A.F. offensive to cut the enemy supply system in Italy; and Operation Thursday, the dropping of troops behind the Japanese lines in Burma in 1944.

**Ophelia** (Gr., help). Character in Shakespeare's tragedy Hamlet. Beloved by Hamlet and commanded by her father, Polonius, to repel his advances, she goes mad after her father has been killed by Hamlet, and eventually drowns herself. See Hamlet.

**Ophicleide** (Gr. *ophis*, serpent; *kleis*, key). Brass wind instrument. It was the successor of the serpent, the bass member of the cornetti group. All these instruments had a cup-shaped mouthpiece and had lateral finger holes at distances to fit the stretch of the hand. Intonation was therefore liable to be imperfect. A new model, the ophicleide, was introduced, with keys to correct the imperfections. The ophicleide has been



Ophicleide, with keys to help fingering

succeeded in the orchestra and military band by the bass tuba or bombardon, but it served a useful purpose in the earlier part of the 19th century. It was used by Spontini in his opera Olympia, 1819, and Mendelssohn wrote for it in his Midsummer Night's Dream music, and in Elijah.

**Ophidia** (Gr. *ophis*, serpent). Scientific name for the sub-order of reptiles known as the snakes. They are grouped with the lizards in the order Squamata.

**Ophioglossaceae.** A small family of Pteridophyta. It has the leaves rolled lengthwise before expansion, and the spores contained in large two-valved capsules without an elastic ring. It includes the genera *Ophioglossum* (adder's tongue fern), *Botrychium* (moonwort fern), and *Helminthostachys*.

**Ophir.** Land famed in O.T. times for its gold, which was brought to Palestine by the ships of Solomon and Hiram, king of Tyre. Its locality has been the subject of much speculation, but S.E. Arabia is the most likely region.

**Ophites** OR NAASENI (Gr. *ophis*, and Heb. *nahash*, serpent). Sect of serpent worshippers. They arose in Egypt in the 2nd century, existed until the 6th century, regarded the serpent that tempted Eve as the embodiment of wisdom, were antipathetic to Jews, and called themselves Gnostics, claiming that they alone understood the deep things of religion. The doctrines adopted by the various bodies of Ophites included elements of Egyptian and Assyrian symbolism, Indian mythology, Greek philosophy, and corrupt ideas of Christian history and doctrine. See Gnosticism.

**Ophiuchus** (Gr. *ophiouchos*, holding a serpent). In astronomy, equatorial constellation south of Hercules. It represented in ancient astronomy the serpent holder who is trampling on the scorpion and strangling the serpent.

**Ophiuroidea** (Gr. *ophis*, serpent; *oura*, tail). Class of brittle or sand stars. They are star-shaped echinoderms, having five arms, used for locomotion, extending from a flat central round disk which contains the mouth. Ophiuroidea have a small free-swimming larval stage, called a pluteus; fossil remains are found in the Silurian and later periods of geological time.

**Ophrys.** Genus of British, European, Asiatic, and African herbs of the family Orchidaceae. The genus includes such well-known species as the bee orchis,

fly orchis, and spider orchis. Their spurless flowers vary from pink to yellow and brown.

**Ophthalmia.** Inflammation of the conjunctiva or mucous membrane which covers the front of the eyeball, and is reflected on to the inner surface of the eyelids. See Conjunctivitis; Eye.

**Ophthalmoscope.** Instrument for examining the back of the eye. Helmholtz's original instrument reflected light into the eye from a small concave mirror with a hole in the centre. Current designs have their own source of light. In both kinds there is a device for interposing different lenses to bring the patient's retina into sharp focus. The precise lens needed provides a check on the patient's requirements for spectacles; the appearance of the back of the eye is of use in diagnosing some diseases.

**Opie, JOHN** (1761-1807). British painter. A native of St. Agnes, near Truro, he obtained the patronage of Dr. Wolcot, known as Peter Pindar, accompanied him to London in 1780, and at once achieved celebrity as the "Cornish Wonder." He became A.R.A.



John Opie, British painter

in 1787, R.A. in 1788, and professor of painting in 1805; and died in London, April 9, 1807. Most immediately successful were his historical paintings, in which, though his technique was always deficient, he showed extraordinary freshness and vigour, but it is probable that his reputation will eventually rest on his simple scenes of Cornish life.

**Opium** (Gr. *opos*, juice). Juice obtained by cutting into the unripe capsules of the opium poppy (*Papaver somniferum*). This is solidified by evaporation, and comes into the market in the form of dark brown or black irregular masses. Crude opium contains a number of alkaloids, of which morphine, which may be present to the extent of 12 p.c., is the most important. Others are codeine, thebaine, and narcotine. In addition, opium contains neutral substances, organic acids, water, mucilage, resin, albumen, glucose, oils, and mineral salts. All the important alkaloids of opium have a narcotic action. Morphine from opium is generally used in British medicine as the hydrochloride. Opium and its deriva-



tives are classified legally as dangerous drugs.

Opium acts as an anodyne and narcotic entirely by virtue of the morphine it contains. It may be sprinkled over hot fomentations applied for the relief of pain, and opium liniment is similarly used. It acts either by local attack or by its influence when absorbed by the central nervous system. The principal uses of ointment of gall and opium are to relieve the pain of haemorrhoids and of anal fissure. Morphine is the most valuable drug for the relief of pain.

Morphine is also of great value for insomnia resulting from acute pain, but should not be given for chronic sleeplessness. Morphine also stops the peristaltic movements of the stomach and intestines. Hence it is of service in all inflammatory conditions of the abdomen, and it is by virtue of this property that opium tends to arrest diarrhoea. Opium may also be given with good effect in some cases of heart disease associated with pain.

**OPIMUM POISONING.** Four grains of opium and two drachms of the tincture of opium have proved fatal, but recovery has occurred after much larger doses. The symptoms usually start within an hour. At first there is a mild degree of excitement, with flushing of the face and quickening of the pulse; soon this is followed by headache, giddiness, and somnolence, which gradually passes into stupor. In the early stages the patient can be roused, but later the coma is profound. The breathing is slow and stertorous, the lips livid, the skin cold and clammy, the pulse slow; the breathing becomes slower and slower, convulsions may occur towards the end, and ultimately the patient dies from asphyxia.

Treatment consists of washing out the stomach with a solution of potassium permanganate, about 10 grains to the pint. Coma is to be prevented, if possible. Once coma has supervened, artificial respiration is used.

#### Effects of Opium Habit

The opium habit is often acquired through the taking of opium to relieve pain. Hypodermic administration is the most frequent form. As the pleasurable excitement and feeling of well-being produced by the drug wear off depression follows, and the victim takes more opium to relieve this. When the habit has been definitely acquired the complexion of the sufferer becomes sallow, he

suffers from sleeplessness, sometimes nausea and vomiting, and emaciation gradually supervenes. He is irritable, and moral changes appear. Eventually there may be signs of peripheral neuritis and death may follow from exhaustion.

The effects of opium-smoking, due to morphine in a minor degree only, differ from those of opium-eating, which is practised in Asia Minor, Persia, and India.

**THE OPIUM TRADE.** The opium poppy, which is indigenous to W. Asia and S.E. Europe, yielded food and oil long before the 3rd century B.C., when soporific extracts were made by the Greeks, and the potent sap from the capsules came into medicinal use before the Christian era. The spread of Islam carried the knowledge of the plant and its properties across Asia, and it was cultivated in China by the 8th century A.D. The Mogul emperors monopolised the Indian opium manufacture, and fostered an export trade. Asia Minor is still an important source of opium for medicinal uses. Good qualities have been produced in Egypt and in several Balkan states, and from early Islamic times Persia has been an active source of supply.

Tobacco reached China from Spanish America by 1620, and at first opium was mixed with pipe tobacco. Within a century the smoking of unadmixed opium became so rife that in 1729 it was prohibited by Chinese imperial edict. After the ancient Indian monopoly passed to the East India company in 1757 the cultivation and trade grew apace. Successive Chinese edicts were persistently ignored, until in 1839 the seizure of British opium stocks at Canton led to the so-called Opium War, 1840-42, which ended in the cession of Hong Kong to the U.K. Importation grew until in 1888 it reached 95,000 piculs of 133 lb. Local cultivation then spread swiftly over China and Manchuria.

In 1891 the British parliament adopted a resolution condemning the Indian cultivation and traffic. The poppy was being grown in Bengal, Agra, and Oudh, this "Bengal opium" being manufactured in government factories at Patna and Ghazipur. "Malwa opium" was produced in several princely states in Rajputana and central India. But high duties tended to discourage the traffic. In 1893-95 a royal commission sat, and recommended stricter supervision of the traffic. By 1906, when China was producing

376,000 piculs, her government promulgated an edict requiring the cultivation and use to cease throughout the empire within ten years. Great Britain undertook to reduce the export to China by annual tenths so long as local cultivation diminished *pari passu*. In 1908 the Hong Kong opium dens were closed.

#### International Control

International cooperation in the control and regulation of the opium trade began with the Shanghai conference, 1909, which cleared the way for the first international opium convention made at The Hague, 1912, and embodying general principles of international control. After the First Great War the League of Nations was given under its covenant the definite task of supervising and executing existing or future conventions and agreements regulating traffic in dangerous drugs.

The Geneva convention, 1925, set up stringent national and international control of the trade in narcotics, except opium for smoking, based on import and export licences, and an international accounting system, working through a permanent central opium board of eight independent experts, with certain powers of overriding national sovereignty. The limitation convention, 1931, limited manufacture of drugs directly, the quantity being determined by an international drug supervisory body. The convention for suppression of illicit traffic, 1936, provided severe penalties for traffickers—an innovation in international criminal law. Two agreements, made at Geneva, 1925, and Bangkok, 1931, concerned measures designed to reduce and eventually suppress opium smoking in the Far East.

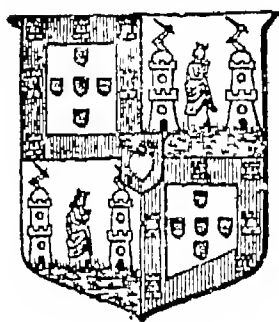
By 1939 some 60 countries were parties to one or more international conventions for deciding the total world medicinal need of drugs, and the legitimate quantities to be manufactured in licensed factories. A clear line had been drawn between authorised and illegal traffic. All channels of distribution had been brought under supervision. The League had reduced the illicit trade to a tenth or less of what it was just after the First Great War.

The United Nations continued the work of the League through (i) its permanent central opium board, (ii) a supervisory body which examines and publishes the final estimates of drug requirements furnished to it by member

governments, and (iii) the commission of narcotic drugs, a policy-making body of representatives of 15 govts.

**Opium War.** See under Opium  
**Opland** OR OPPLAND. Inland fylke or co. of Norway. In the N. it rises in Galdhøppigen to 8,399 ft., the highest point in Norway; Snöhetta, another peak, is 7,615 ft.; in the S. the land is low near Lake Mjosen and Randsfjord. A depression connects the Romsdal to the N.W. with the long valley of Gudbrandsdal in the S.E. Here is the main road to the Atlantic coast, with a rly. for two-thirds of the way from Lillehammer, the chief town, at the head of Lake Mjosen. Area, 9,608 sq. m. Pop. (1950) 160,421.

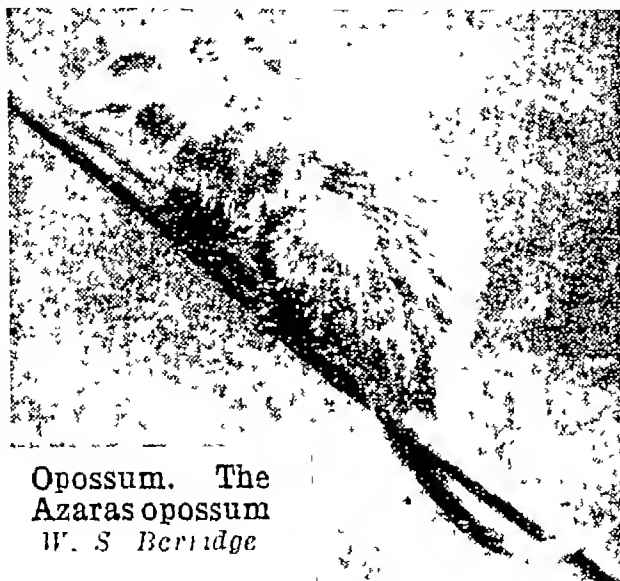
**Oporto** (Port. Porto, port). City of Portugal, capital of a dist. of the same name. It stands on the N. bank of the Douro, 3½ m. from the Atlantic and 209 m. by rly. N. of Lisbon.



Oporto arms

It is built in a succession of tiers on a hill slope, and lines the river for about 2 m. A striking feature is its two fine bridges; one carries the rly.; the other has two roadways; the upper one is 203 ft. above the water, with its arch, one of the largest in Europe, spanning 560 ft. Gaudily painted houses give the city an Oriental appearance. The cathedral was built on the site of a Visigothic citadel dating from the 12th century. Other buildings include an episcopal palace, many old churches, museums, opera house, bull ring, mint, and university. The Torre dos Clerigos (Tower of the Clergy) is 246 ft. high.

The centre of the port wine trade and a busy manufacturing town, Oporto rivals Lisbon, calling itself the capital of the North. Apart



Opossum. The Azaras opossum  
W. S. Berridge

from the shipping, mostly carried on from its harbour of Leixões (*q.v.*), its chief industries are the spinning and weaving of cotton, wool, and silk, sugar refining, distilling, tanning, and the manufacture of pottery, hats, gloves, tobacco, paper, and articles of luxury. Wine barrels are made at the S. suburb of Villa Nova de Gaia, across the river, where are warehouses for the storage of wine, grain elevators, convents, and villas. Fishing is extensively carried on.

The Alani, who conquered the district in the 5th century, called their new town, on the N. bank of the Douro, Castrum Novum. The Visigoths took it about 540, the Moors captured in 716, and the Christians in 997, and finally in 1092. For a time it was the capital of the counts of Portucalia. Its commerce greatly increased after the earthquake at Lisbon in 1755. It was occupied by the French in 1808-09, was besieged by Dom Miguel, 1832-33, and in 1847 was held by revolutionaries. To quell a rising in 1927, government troops shelled the city for three days. It has always been active politically. Pop. (1950) 281,406.

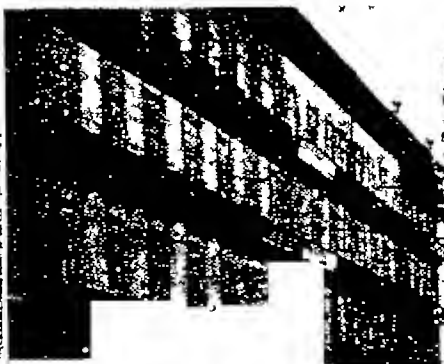
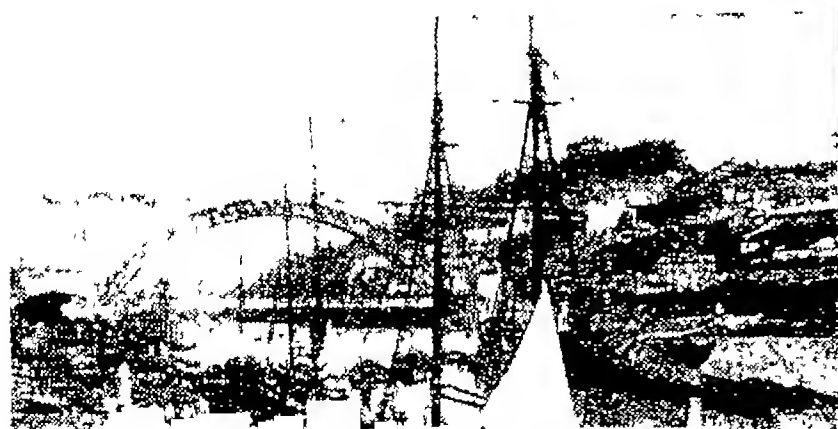
**Opossum** (*Didelphys*). Marsupial mammal. The family to which it belongs is found only in America, though fossil remains occur widely distributed throughout the world. Opossums are all of small size, nocturnal in habit,

carnivorous and insectivorous, and with few exceptions make their home in the trees. Most species have long prehensile tails, but some lack the pouch characteristic of marsupials. In Australia the name opossum is given to the phalanger (*q.v.*). See Marsupials.

**Oppeln** (Pol. Opole). Former capital of the former German prov. of Upper Silesia. It is situated on the Oder and the main Berlin-Budapest rly. Until severely damaged during the Second Great War it contained many impressive old buildings, such as the church of S. Adalbert (900), the church of S. Cross (1400), and a tower of the 14th century castle. Its industry, which was considerable, included the manufacture of cigars and cement, and the mining of lignite. From 1163 to 1532 it was the residence of the Silesian Piast dukes, and was joined to Prussia in 1742. Its 1939 pop. was 44,680. Captured Jan. 24, 1945, by Koniev's 1st Ukrainian army in an impetuous tank and infantry advance, Oppeln lay in the area placed under Polish administration by the Potsdam agreement (*q.v.*).

**Oppenheim**. Tn. of Rhineland-Palatinate, W. Germany, on the left bank of the Rhine, 20 m. S.S.E. of Mainz. The Gothic church of S. Catherine contains the tombs of the Dalberg family (*q.v.*). Oppenheim, which produces a well-known wine, was founded in 774 as an estate of Charlemagne. For four centuries it was a free city, but was taken by the Swedes in 1631, and by the French in 1689, 1792, and 1794. In 1816 it became a part of Hesse. After the Second Great War Oppenheim fell within the French zone of occupation. Pop. 4,078.

**Oppenheim, EDWARD PHILIPS** (1861-1946). British novelist. Born at Leicester, and educated at Wyggeston grammar school, he became widely known as a writer of popular fiction, his





novels of mystery and sensation being marked by ingenuity of construction and high dramatic quality. His huge literary output includes *The Amazing Judgment*, 1897; *The Master Mummer*, 1905; *The Mischief Maker*, 1913; *The Double Traitor*, 1918; *The Great Impersonation*, 1920; *The Golden Beast*, 1926; *The Million Pound Deposit*, 1930; *Murder at Monte Carlo*, 1932; *Envoy Extraordinary*, 1937; *The Last Train Out*, 1941; *Mr. Mirakel*, 1942; and many others. His autobiography, *The Pool of Memory*, was published in 1941. He died Feb. 3, 1946.



E. Phillips Oppenheim,  
British novelist  
Russell

**Oppenheimer, SIR ERNEST** (1880-1957). S. African financier. Born at Friedberg, Hesse, May 22, 1880, he worked in the London offices of a diamond firm, emigrating to Kimberley, S. Africa, in 1902. Mayor of Kimberley, 1912-15, and its M.P., 1924-38, he was knighted 1921. Chairman of the Anglo-American diamond corporation, he also played a large part in the exploitation of gold in Transvaal and the O.F.S. One of the world's richest men, he gave generously to charity and education in S.A. and in the U.K. He died at Johannesburg, Nov. 25, 1957.

**Oppenheimer, (JOHN) ROBERT** (b. 1904). American physicist. Born in New York, April 22, 1904, he was educated at Harvard, Cambridge, and Göttingen universities, and then became successively assistant professor, associate professor, and professor of physics at the University of California, 1929-47. He was director 1943-45 of the scientific laboratory at Los Alamos, New Mexico, where the atomic bomb was perfected; chairman of the general advisory committee to the U.S. atomic energy commission, 1946-52; director and professor of physics at Princeton from 1947.

**Opposition.** In British politics, the name given to the party that is out of power. An opposition is an essential part of parliamentary government, but the word was first used in this sense in 1826 by John C. Hobhouse, afterwards Lord Broughton. Gradually it came into general use, and the opposition became a regular part of the machinery of government, its leaders having recognized

places and precedence in both houses of parliament. The institution was adopted in all parliaments of the British Commonwealth, and in some foreign legislatures. In the British house of commons the opposition sits on the benches to the Speaker's left, facing the government and its supporters on his right. The leader of H.M. Opposition was officially recognized in 1937 and given a salary of £2,000 (raised in 1957 to £3,000) per annum.

**Opposition.** In astronomy, the position of one heavenly body with respect to another when differing from it in longitude by  $180^\circ$ . When the earth, the sun, and another planet are in a straight line, the planet is in opposition when it is on the other side of the earth from the sun, and in conjunction (*q.v.*) when on the same side.

**O.P. Riots.** On the reopening of Covent Garden Theatre, London, by J. P. Kemble, in 1809, the theatre having been destroyed by fire, great indignation was aroused by the announcement that prices of admission were to be increased and private boxes installed at the expense of pit and gallery. The resultant rioting among the audience became known as the O.P. (old prices) riots. Disorder broke out on the opening night, Sept. 18, and continued with each performance until Dec. 16. Much damage was done, many persons were arrested, and the old prices were later restored.

**Ops.** In Roman mythology, wife of the god Saturn, and patroness of agriculture. The Romans identified her with the Greek Rhea (*q.v.*).

**O.P. Side.** In stage directions, this is the side opposite to the "prompt" side; usually the right of the stage from the actor's point of view.

**Opsonin.** Term used in bacteriology to explain the effect which normal human blood serum has upon the destruction of bacteria in the blood by leucocytes. Experiment has shown that there are substances in the blood serum which in some way or other so modify bacteria as to render them more easily attacked and devoured by the leucocytes. This change is known as the opsonic effect, and the substances in the serum which render the bacteria more easily destructible are called opsonins. By a highly technical bacteriological process an exact standard of the power of serum in this respect can be

arrived at, and the serum of one individual compared with another before and after treatment. This standard is known as the opsonic index. *See Phagocytosis.*

**Optical Glass.** Variety of glass used in the manufacture of lenses for optical instruments. The first essential characteristic of optical glass is that it must be homogeneous, and this has made it one of the most difficult glasses to produce to perfection. Guinand in the 18th century made the first attempt at homogeneous flint glass manufacture by constantly stirring the molten glass, and in 1824 the Royal Astronomical Society appointed a committee to consider the question of optical glass making.

The researches of Abbe and Schott at Jena, however, on the effect of various oxides on vitreous fluxes led to the invention of Jena optical glass, now in general use. The old varieties of optical glass consisted mainly of silicates, while modern glass contains many oxides, *e.g.* those of barium, zinc, aluminium, etc., silicates and boric anhydride, which enable lenses of remarkable purity and optical qualities to be made.

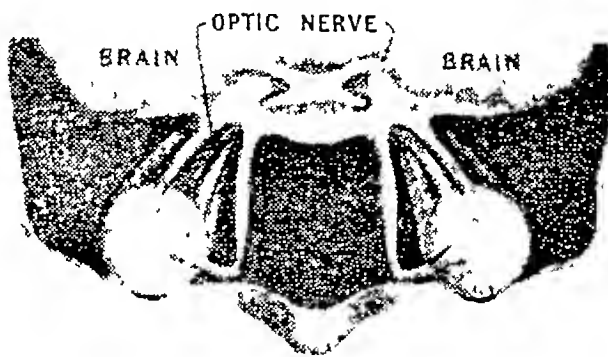
The glass has to go through a number of processes, *e.g.* moulding and annealing, and the high proportion of the finished glass which has to be rejected, on account of air bubbles, fractures, and other defects, makes the glass actually fit for optical purposes very expensive. Not more than one fifth of the total glass manufactured for optical purposes is actually used, as a rule. In the design of lens systems it is an obvious advantage to have available a wide range of glasses with different characteristics, *e.g.* the introduction of lead into flint glass has the effect of increasing the mean refractive index and giving a higher relative dispersion. *See Glass.*

**Optician.** One who makes or deals in optical glasses and instruments, or who examines the eyes and prescribes spectacles. There is in the U.K. no legal status for opticians, and the term is often used by those who sell spectacles. When applied to ophthalmic opticians it indicates one who, having passed the necessary examinations, is qualified by the Worshipful Company of Spectacle Makers, or by the British Optical Association. The Spectacle Makers Company holds a royal charter, and grants to all successful candidates.

a diploma and the right to append the initials F.S.M.C. The British Optical Association grants a certificate and the right to append the letters F.B.O.A. Other examining bodies in the U.K. are the Scottish Association of Opticians, the National Association of Opticians, and the Institute of Chemists and Opticians. In the U.S.A., and in many of the provinces of Canada and Australia, compulsory qualification and registration are required before a person can engage in the practice of sight testing. See Eye; Sight.

**Optic Nerve.** Nerve of sight. Arising from the lower part of the brain, it passes forwards into the orbit, where it enters the eyeball, and its fibres spread out over the inner surface of the retina. Inflammation of the optic nerve, or

optic neuritis, is a serious affection which most frequently arises in the course of tumours or other affections of the brain, or Bright's disease. Optic atrophy is a degeneration of the nerve fibres



Optic Nerve. Diagram showing position of optic nerve from above

which may follow optic neuritis, or may be due to tabes dorsalis (locomotor ataxia) and other nerve diseases. The condition eventually results in blindness. See Eye; Nerve.

## OPTICS : SCIENCE OF LIGHT AND VISION

R. W. B. Stephens, Ph.D., Imp Coll. of Science and Tech.

*Among the articles which supplement the information given below are Dispersion; Lens; Light, Refraction, Relativity; Spectrum*

The most familiar phenomena of vision are our inability to see objects round corners; the forms of shadows cast by opaque bodies; the formation of images of luminous objects by mirrors and the lenses of such instruments as reading glasses, telescopes, microscopes, cameras and projecting lanterns. A great deal of the knowledge we possess concerning these matters is very satisfactorily summarised in a few principles which are referred to as the laws of Geometrical Optics; these are statements which if assumed to be true will lead by the deductive methods of pure geometry to conclusions which are in very exact accord with experimental results. In this branch of optical science no hypothesis is made as to the nature of light beyond the simple assumption that it is an influence emitted from all visible bodies and capable of affecting the retinae of our eyes.

### Umbra and Penumbra

Very little observation is required to convince us that this influence is propagated in straight lines. If one examines the shadow cast by an opaque body on a white screen in a room lit by one source of light only, an intensely black central part, called the umbra, is, in general, observed, around which is spread a less dark part, gradually fading into the complete illumination of the rest of the screen; this annular, partially illuminated portion of the shadow is called the penumbra.

Careful investigation will show that it is impossible to draw a straight line from any point on the

surface of the luminous source to any point in the umbra which does not cut through the opaque object, and that if we select any point in the penumbra it is possible to draw straight lines to points on a portion of the luminous source which do not meet the opaque object, the portion of the source becoming larger as the point chosen in the penumbra moves further out from the umbra, until we reach those parts of the screen in full view of the complete source. In particular, if the source is of very small dimensions, the penumbra is so small as to be imperceptible except at very close quarters, and the shadow consists almost entirely of an umbra.

### Eclipses as Examples

The eclipses of the sun and moon are examples of shadows on an enormous scale, e.g. during total eclipses of the sun there is at any instant one comparatively small portion of the earth where the eclipse is actually total; this portion is the umbra of the shadow cast by the moon. Outside this lies a ring shaped portion, the penumbra, where the eclipse is only partial. Owing to the rotation of the earth, these portions move over the earth's surface, and thus we see the reason for the existence of the "track of totality." As a further illustration of rectilinear propagation we may instance the familiar "streaks" in front of a projecting lantern or within a fairly dark room into which sunlight is streaming through a window; but in this connexion it may be well to remove a common misconception. One is not "seeing

light" in these circumstances; such a phrase betokens a confusion of ideas; what we see is the dust and motes in the atmosphere which are being more than usually illuminated, and the cylindrical or conical form of these streaks arises from the rectilinear paths pursued by the elements of light emitted by the source. The fact of rectilinear propagation leads naturally to the use of the phrase, a beam of light, and still further to the conception that such beams are composed of extremely narrow beams which we idealize as straight lines and call rays.

### Principles of Reflection

This concept of a ray is invaluable in the study of reflection and refraction of light. As a rule reflection from the surface of a body is quite irregular; the rays from a self-luminous source when they reach walls, floor, ground, etc. are scattered and redirected in all directions, otherwise such non-luminous, but illuminated, objects would not be visible from all points of view, as they actually are unless opaque bodies intervene. But provided the surface of a body has a certain amount of polish or smoothness, we begin to observe traces of regular reflection. The appearance of a well-polished table is an example of such partial regular reflections; and when the polish reaches that of the best glass or a brilliant metallic surface, practically all the reflected light is regularly reflected, and we get the phenomena of images.

In such cases each reflected ray makes the same angle as its incident part with the "normal," i.e. the line perpendicular to the reflecting surface at the point of incidence, and the incident ray, reflected ray and normal lie in one plane. Such a deviation from their original paths causes a small cone of rays, which could enter the pupil of an eye, originally emitted by a minute portion of a luminous or illuminated body (a "point-source"), to appear on its reception by an eye to be diverging from quite another point. The aggregate of such "point-images" forms the image of the body which is the aggregate of the original "point-sources." In certain cases of curved mirrors, a cone of rays originally diverging from a point-source may be made to converge by reflection and thus pass through a point only to diverge once more from what is called a "real" image which is actually in front of the mirror and not behind it. The reader may verify this for himself by looking into the hollow of a spoon with a lamp near at hand.



When light passes from one transparent medium to another, not only reflection occurs, but it is also observed that the portion of the light which enters the second medium is in general diverted from the original path. This occurrence is called refraction, and in the discussion of it the concept of a ray enables us to reduce our knowledge concerning refracted light to two simple geometrical statements: (1) the incident ray, the refracted ray, and the normal are in one plane; (2) the sine of the angle of incidence bears to the sine of the angle of refraction (*i.e.* the angle between the refracted ray and the normal) a ratio which is definite for two given media. Thus from air to glass this "index of refraction" is  $3/2$ ; from glass to air  $2/3$ ; air to water  $4/3$ ; water to air  $3/4$ ; water to glass  $9/8$ ; glass to water  $8/9$ ; and so on. Each pair of substances has its ratio, and its value gives the ratio of the velocities of light in the two media concerned. Images produced by lenses in reading-glasses, telescopes, cameras, etc., are due to the deviations of the rays of light emitted by a source, and their redirection into new paths which pass "really" or "virtually" through the points of the images which are actually seen by us; and experiment confirms the fact that all such appearances can be arrived at deductively by the methods of geometry, if we apply the two simple statements enunciated above to the given conditions in any case.

But geometrical optics is quite inadequate to explain a large number of observed results of experiment in optical science. The phenomena of interference, diffraction, polarisation, and even chromatic dispersion are quite beyond its scope. As a simple statement of interference we can say that it is possible for two specially adjusted sources of light to produce darkness along certain paths, this being compensated by reinforced illumination along others. In diffraction we deal with the existence of certain colour fringes well inside the geometrical shadow cast by the edge of an opaque object. By considering the effects of diffraction, attention was directed to the limitations on the performance of optical instruments, such information not being derivable from purely geometrical considerations.

When a ray of light passes through calcite it is divided into two rays which travel in general

with different velocities in the crystal. The velocity of the so-called ordinary ray is independent of direction, but the extraordinary ray is variable and has a maximum value in the direction of the optic axis (when it is equal to that of the ordinary ray), decreasing to a minimum in a perpendicular direction. Calcite is termed a negative crystal, to distinguish it from, say, quartz, which belongs to the positive class in which the extraordinary ray has the greater velocity in directions other than along the optic axis. The effect was explained by Young assuming that light waves were transverse, so that for each refracted ray there was a plane containing the ray which inhibited singular physical properties in any subsequent treatment of the ray. This phenomenon is known as double refraction or bi-refringence; and the rays are said to be "plane-polarised" in perpendicular planes. Thus if the ray is directed on to a piece of glass at a definite angle, and if the plane of polarisation of the ray is at right angles to the plane of incidence on the glass, no reflection takes place, the entire energy of the ray being transmitted into the glass.

In such phenomena, no adequate explanation is possible without the help of a definite theory as to the nature of light. In works on physical optics, appeal has to be made to mathematical analysis of a type much more complex than that involved in the comparatively simple geometry employed in geometrical optics.

With the advance of physics, the subject of optics has not lagged behind. Problems of illumination and colour are important in industry and everyday life; one need only cite the existence of the established profession of illumination engineer. In physiological optics considerable advance has been made, and in general the research worker is receiving more assistance from the improvement in such tools of research as optical glasses, light detecting devices, photographic plates, etc.

R. W. B. STEPHENS, Ph.D.

THE METEOROLOGICAL ASPECT. Light reaching the earth's surface from the sun, moon, or stars must pass through the earth's surrounding atmosphere, producing numerous optical phenomena. Refraction of the rays by the gases in the atmosphere results in the formation of mirages and is responsible for the twinkling of the stars. Rainbows and haloes are due to

reflection and refraction by water drops and ice crystals respectively; coronae are diffraction effects produced by water drops. The blue colour of the sky arises from the scattering of sunlight by individual molecules constituting the air, the short waves composing the blue and violet end of the spectrum being more scattered than the long yellow and red waves. Changing colours at sunrise and sunset are accounted for by the loss of the shorter wave-lengths which the white light suffers on passing through the layers of air then comparatively thick. Twilight is caused by the reflection of sunlight on to the earth's surface from the upper regions of the atmosphere, which, although the sun has set, are still illuminated directly.

*Bibliography.* Physical Optics, R. W. Wood, 1911; Theory of Light, T. Preston, 1912; Treatise on Light, R. A. Houston, 1938; Physics of the Air, W. J. Humphreys, 3rd ed. 1940; Experimental Spectroscopy, R. A. Sawyer, 1945; Practical Optics, B. K. Johnson, 1945; Applications of Interferometers, W. E. Williams, new ed. 1947.

**Optime** (Lat., excellently). Adverb taken from the phrase *optime meruit*, he has deserved very well, and used at the university of Cambridge as a name for candidates for honours who are placed in the second and third classes of the mathematical tripos. They are known as senior and junior optimes respectively. *Pron.* Optim-ee.

**Optimism** (Lat. *optimus*, best). The tendency to regard things in the most favourable light, opposed to pessimism. In philosophy, it is the doctrine that this world is the best of all possible worlds. There are two kinds of optimism, relative and absolute. The world may not be absolutely good, but at least the good in it is predominant. Leibnitz, in his *Theodicée* (justification of God), endeavours to prove that God, in His infinite intelligence, conceived an infinity of possible worlds, and called into being the one which He regarded, all things considered, as the best. But even this does not exclude the idea of infinite perfectibility. *See* Pessimism.

**Option** (Lat. *optare*, to choose). Literally, the act of choosing. In financial language an option is the right to buy or sell something, for which right money is paid. Thus a man pays for the right to buy certain shares at a certain price, or to buy a house or property of other kinds. If he does

not wish to exercise his option he loses the money paid down. An option to buy is termed a call, and an option to sell a put. See Stock Exchange.

**Opuntia.** Genus of succulent plants of the family Cactaceae. All are natives of America and some are familiarly known as prickly pear and Indian fig. The majority require treatment in green-houses, as some of them reach a height of 20 to 30 ft. Several species are quite hardy in the U.K. on well-drained soil. They flower during the summer months, with red, yellow, or purple blossoms, and thrive in a mixture of loam and limestone. Opuntias should be watered liberally during the summer months, but require no water from Nov. till Feb. They are propagated by cuttings of the stem planted in gritty soil in early spring.

**Or** (Fr.). In heraldry, gold, the principal metal. It is represented in drawings by small dots over the whole space, and in painting either by gilding or by yellow pigment. See Heraldry, colour plate.

**Oracle** (Lat. *orare*, to speak, pray). Originally, in Greece, the seat of worship of a deity where responses were given to inquirers, usually with reference to public events. The word was also used of the response itself. Such responses were accepted as representing the voice of the deity as expressed through a priest or priestess in a state of religious exaltation, or through some other medium, as at the oracle of Zeus at Olympia, where the divine will or knowledge was interpreted by inspection of the entrails of sacrificed animals.

The oracle was a characteristic feature of the religion of the ancient Greeks. Other well-known Greek oracles besides that at Olympia were the oracle of Zeus at Dodona (*q.v.*) in Epirus, which was considered the most ancient, and that of Apollo at Delphi (*q.v.*), the most famous of all. Its responses were interpreted by the priests in hexameter verse. Oracular responses in general were said to be characterised by ambiguity—a notable example being the response to Croesus (*q.v.*). Though the Delphic oracle was accused by the Athenians at any rate of partiality towards the Spartans, there is no doubt that on the whole the ancient oracles were on the side of

morality, both public and private. An oracle was always consulted before the foundation of a colony. The oracle of the hero Amphiaraus, at Oropus in Attica, gave replies to inquirers in dreams. Oracles also existed among the ancient Babylonians and Egyptians. The Hebrew Urim and Thummim (*q.v.*) were a kind of oracle.

**Oradea.** Town of Rumana, in S. Bihar, close to the Hungarian border. Part of Hungary until 1918, it was known as Nagyvarad; earlier it was called by the German name Grosswardein. Lying E. by S. of Budapest, it is 160 m. distant by rly.

It contains many educational institutions and two museums. Near by are warm springs. Reputed to have been founded by S. Ladislas in 1080, Oradea was sacked by the Tartars in 1241. Pop. 93,000.

**Oradour-sur-Glane.** Village of Haute-Vienne dept., France, 15 m. N.E. of Rouchecourt. During the Second Great War, on June 10, 1944, the entire village was destroyed by the Germans as a reprisal against the resistance movement. Nearly all the 750 inhabitants were shot or burned alive in the church. The ruins were left as a memorial, a new village being built near by. Oradour was awarded the Legion of Honour, 1949. In 1953, 21 members of the S.S. responsible were brought to trial; two were sentenced to death, the others to imprisonment. The French national assembly, however, immediately amnestied 12 Alsatian conscripts among the 21.

**Oræfa Jökull.** Volcanic mt. of Iceland, the culminating peak of

Vatna Jökull (*q.v.*), alt. 6,990 ft. It is the highest point on the island, and was first scaled in 1891 by F. W. Howell. Eruptions occurred in 1341, 1342, 1598, and 1727.

**Orage,** ALFRED RICHARD (1873–1934). British journalist. Born at Dacre, Yorks, Jan. 22, 1873, he became a teacher before adopting a journalistic career in 1906. Editor of *The New Age* before the First Great War, he made it an outstanding literary review, attracting brilliant controversialists to write for him. He later edited *The New English Weekly*. Orage published studies of Nietzsche, and *An Alphabet of Economics*, being an advocate of social credit. He died Nov. 6, 1934.

**Orakzai.** Pathan tribe of the Pakistan-Afghan frontier. Living S. of the Afridi, they differ in their less guttural N. Pushtu speech, and less robust physique. They occupy the lower valleys.

**Oran.** Regional prefecture of Algeria. Bordering upon Morocco, it was conquered by France during 1835–47. Formerly divided into five civil arrondissements and three military divisions, in 1956 it was redivided into four depts.—Oran, Mostaganem, Tlemcen, and Tiaret. Area 23,500 sq. m. Pop. (1954) 2,178,800.

**Oran.** Seaport of Algeria. On the Gulf of Oran, it is 260 m. by rly. W.S.W. of Algiers, and capital of Oran prefecture. The city, which has an excellent harbour, exports wine, cattle, grain, and minerals. The modern parts are well planned and stoutly built in the fashion of a French city; notable buildings are the Château-Neuf, 1563, the museum and library, R.C. cathedral, and the Grand Mosque. Pop. (1954) 299,008.

Oran was captured by the Spaniards in 1509, abandoned by



Opuntia. Stem and flower of the Indian fig

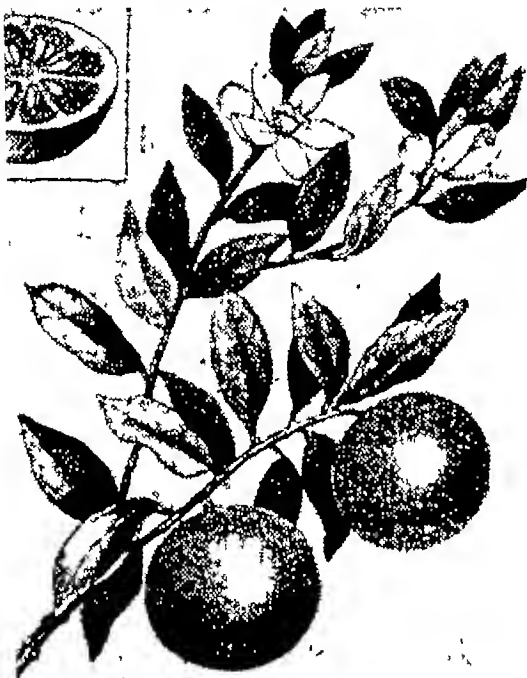


Oran, Algeria. View of the harbour and fort of this important city of N. Africa, from the Promenade de l'Étang



he French commander refused British terms, and a short war ensued in which the battleships Dunkerque and Strasbourg were damaged, an older battleship sunk, and another badly aged. On Nov. 8, 1942, U.S. troops landed in the vicinity of Oran, occupying the town and establishing a base on Nov. 10.

**Orange** (Arab. *nāranj*). Fruit of *Citrus aurantium* and its variegated evergreen trees of the family Rutaceae, natives of Asia. Whether the several varieties of orange



Orange. Spray of foliage, flower, and fruit. Inset, fruit in section

are descendants of a single wild species or of several species is an open question, oranges having been cultivated for so many centuries here that there has been time for many varieties to have arisen. The date at which the tree was introduced into Europe is not known; but it is believed that conquering Arabs brought it from India, its native country, as far W. as Arabia in the 7th century, and later to Italy, Spain, France, and Spain. A tree at the Villa of S. Sabina, Rome, is reputed to date from about 1200; another at Versailles is said to have been sown in 1421. The first British oranges appear to have been grown by Sir Francis Drake at Beddington, Surrey, in 1595. The principal varieties grown are the sweet Seville's, the bitter Seville, the Maltese blood, the Uppington Navel, Seedling, du Val, and Valencia Late, also the mandarin.

Imported oranges have had to be gathered and packed while green, and undergo a sort of

orange trees are chiefly for ornament. For this purpose they may be raised from seed ("pips") or cuttings, and grown in good loam, to which has been added sharp sand and crushed bones, or dry cow-manure. The seeds will germinate in a warm greenhouse (about 60° F.), and when the plants are large enough they should be transferred to tubs, which may be placed outside in the summer, and in winter given a temperature of 50° F. Sheep-dung mixed with loam should be given as a top-dressing in spring, and during summer they require liberal watering.

The cultivation of the orange on a commercial scale is practised in Florida and California. There seedling orange trees are found to last longest, and are more hardy. They are, however, extremely thorny and the fruit was long regarded as inferior, but seedless navel oranges are now marking an improvement in quality. Oranges are grown commercially also in Palestine, S. Africa, Australia, Jamaica, Spain, and Brazil.

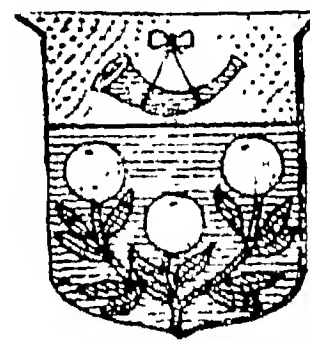
Being gross feeders, orange trees must be well manured. It is essential that they receive plenty of potash; stable manure applied alone causes "die-back." They also require spraying to keep down red-spider, scale, and other insect or fungus pests, while careful pruning is most necessary. Well treated, the orange is extraordinarily prolific. Yields of 16,000 oranges have been secured from a single tree. Orange trees continue in bearing for a number of years; many have borne well for a century. See Citrus.

**Orange, GARIEP, OR GROOTE RIVER.** Largest river of S. Africa. It rises in the Mont aux Sources (11,000 ft.) in the highest portion of the Drakensberg Range, in the N.E. of Basutoland. Its basin comprises 40,000 sq. m. of the high plateau of S. Africa, and it reaches the Atlantic Ocean about 45 m. N.W. of Port Nolloth. The upper tributaries flow among the magnificent mountains of Basutoland,

It joins the Orange above Bethulie, and the Vaal joins above Prieska; all other perennial affluents are short.

Below Prieska the Orange flows, often through narrow, almost impassable gorges, for 500 m. in a sandy, arid district, the desolate S. portion of the Kalahari Desert, with numerous tributary valleys usually dry. Below Uppington are the Great Falls of Aughrabies, 60 ft. wide, 400 ft. drop, at Waterval, which exceed both Niagara and the Victoria Falls in height, but lack their accessibility and beauty. W. from Palmietfontein the Orange forms the N. boundary of the Cape Province. It was explored in part in 1779 by Colonel Gordon, who hoisted the Dutch flag in the middle of the stream, and named it after the stadtholder of Holland.

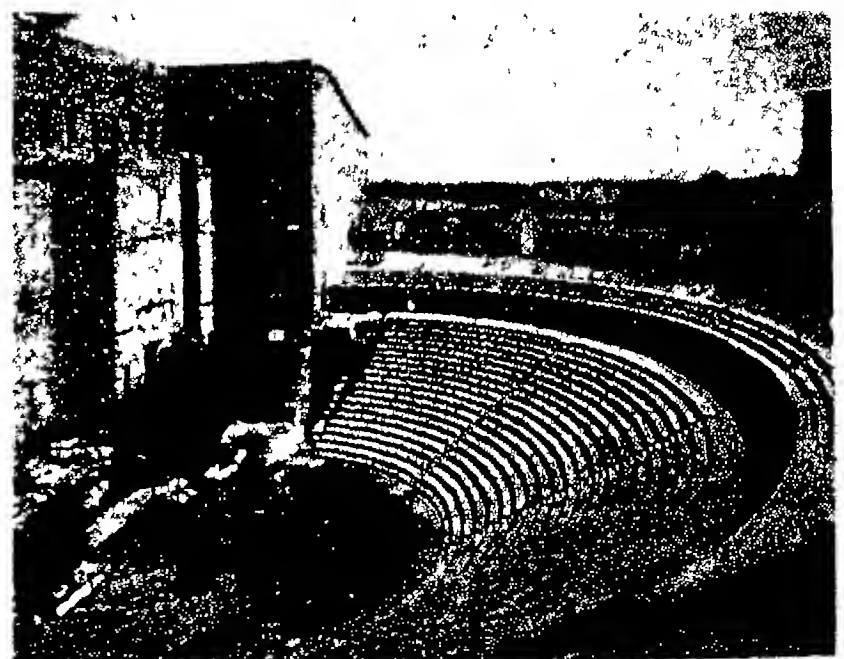
**Orange.** Town of France. It is on the river Meyne, 17 m. by rly. N. of Avignon, in Vaucluse dept.



Orange arms

The ancient Arausio, it has a Roman triumphal arch, probably erected in the early years of Augustus, repaired since 1825, and a Roman theatre,

dating from the 2nd century, the colossal façade of which is visible from all parts of the town. The tiers of seats were restored in 1894, and the building is now a national theatre in which open-air plays are occasionally performed. The cathedral of Notre Dame dates from the 11th century. Here are textile, dyeing, and tanning industries. A principality which passed



Orange, France. Interior of the Roman theatre, showing the restored tiers of seats

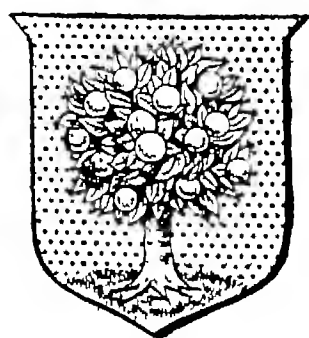
in the middle of the 16th century to the house of Nassau, it was claimed on William III's death by Prussia, which ceded it to France by the treaty of Utrecht, 1713. Pop. (1954) 17,478. See also Orange (family name).

**Orange.** Town of New South Wales, Australia. Situated 3,000 ft. above sea level, and 190 m. W.N.W. of Sydney by rail, it is the centre of a fruit and wheat growing district, and a rich mineral area, yielding gold, silver, and copper. The town has been since 1830 an important point on the route W. from Sydney over the Blue Mts., first by the main road, and later by the rly. Pop. (1956) 18,780.

**Orange.** City of New Jersey, U.S.A., in Essex co. It lies 12 m. W. of New York and is connected with that city and Newark by rly. Like East, South, and West Orange, it has become an industrial as well as a residential suburb. Hats are made by the large negro and foreign element. Fine residences of New York business people dominate the neighbouring heights. Settled c. 1670, Orange was incorporated as a township in 1806 and chartered as a city in 1872. Pop. (1950) 38,037. See East Orange; West Orange.

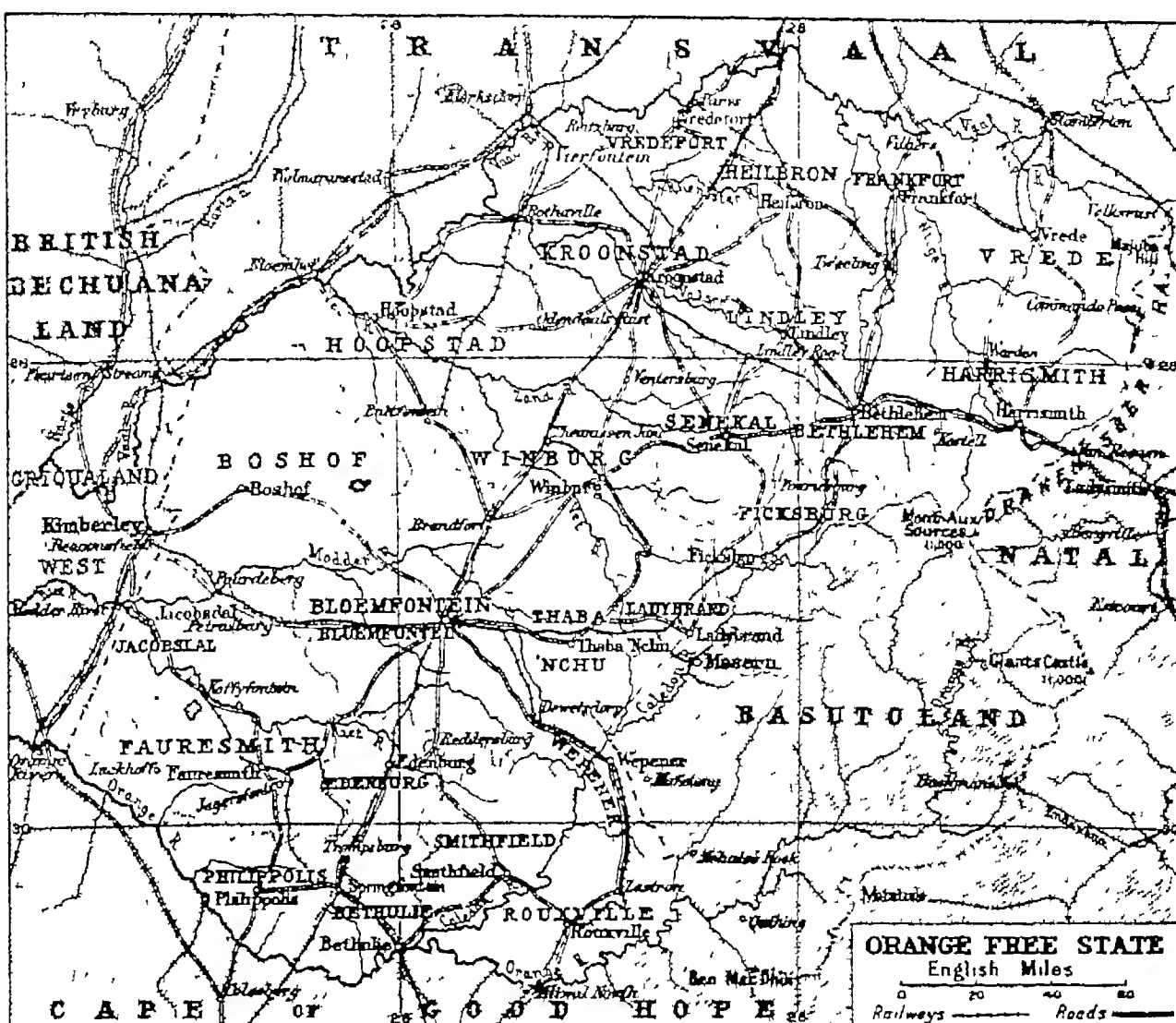
**Orange.** Name of European family. It is taken from the little French principality of Orange, which had its own rulers from about 900. In 1500 the family died out, and Orange passed to a member of the Nassau family, later princes being known as of Orange-Nassau. One of these was William the Silent. The title was retained by his descendants, one of whom was William III of England; their interests were chiefly in the Netherlands of which a member became king as William I in 1813. See Nassau; Netherlands. Consult The House of Orange, M. E. Grew, 1947.

**Orange Free State** OR ORANJE VRYSTAAT. Province of the Union of South Africa. It is bounded N. by



Orange Free State arms

the Transvaal, E. by Natal and Basutoland, and S. and W. by the Cape Province. The area is 49,647 sq. m.; length about 350 m. and breadth about 300 m. One of the flattest stretches of land in the world, it is called the prairie province of S. Africa. The country is an almost treeless tableland at an average alt. of about 5,000 ft., sloping from the Drakensberg



Orange Free State. Map of the province of the Union of South Africa which takes its name from the Orange River

range in the E. to the valleys of the Orange and Vaal rivers, which form its S. and N. boundaries.

The climate is temperate and rainfall moderate, chiefly in the form of violent thunderstorms in late summer. There is some good soil, but irrigation is required in many parts. The farmer has had to struggle against long droughts followed by heavy floods. He is poorer than farmers of the other provinces; for this reason the O.F.S. was known as the Cinderella province. Cattle, sheep, and ostriches are reared. Maize is the chief crop, others being wheat, oats, potatoes, tobacco, and fruit. Rich diamond deposits and coal are worked, and gold and iron are found. Wool, diamonds, and ostrich feathers are exported. Pop. (1951) 1,011,456 (226,713 white).

European authority in the country began about 1824, when some Dutch farmers crossed into it from Cape Colony. Previously the only inhabitants had been Hottentots, Bushmen, and other Africans. In 1836 more Dutch farmers arrived, to find suitable land for tilling, and to escape from the jurisdiction of the Cape government. These settlers declared their land a republic. After the British appeared there was continuous trouble, there was no clear dividing line between their spheres of influence. British sovereignty was declared in 1848 but abandoned in 1854, when a Boer republic was formed.

Under the long presidency of Brand, which ended in 1888, the

country prospered, being aided by the opening up of diamond fields. Under his successor, Reitz the Boer republics entered into closer relations with each other, and in consequence the O.F.S., under Steyn, joined the war against Great Britain in 1899. This ended with the occupation of Bloemfontein and the annexation of the country as the Orange River Colony. In 1902 the Boers acknowledged the rule of Great Britain. Responsible government was given to the prov. in 1907, and in 1910 it joined the Union of South Africa, reverting to the name O.F.S.

To the house of assembly at Cape Town it sends 17 members, and to the senate eight. The franchise is confined to British subjects of the white races. For managing its internal affairs the province has an executive committee of four members, presided over by an administrator appointed by the Union. This is responsible to a council of 25 members elected for three years. The matters under its control include education, and its income is derived from taxation and subsidies from the Union parliament. The judicial system consists of a provincial court at Bloemfontein from which there is a right of appeal to the supreme court.

Bloemfontein is the capital, a city of gardens and stately buildings. Peopled by Dutch and Huguenot stock, it was founded by an Englishman, H. D. Warden. It is an important rail, road, and air junction. One of the chief events in



O.F.S. history was the discovery of gold in 1946 at Odendaalsrust, about 150 m. S.W. of Johannesburg. This was the richest strike in the history of gold mining. Sir Ernest Oppenheimer estimating that it could produce £50,000,000 worth of gold a year; and it meant a substantial change for the O.F.S., hitherto almost completely pastoral, to industrial activity. There was also a post-war boom in the diamond industry.

**Orangemen's Day.** A public holiday celebrated in N. Ireland on July 12. This was the date of the battle of Aughrim, 1691, a victory for Protestants owing allegiance to William III over Catholics who fought for James II.

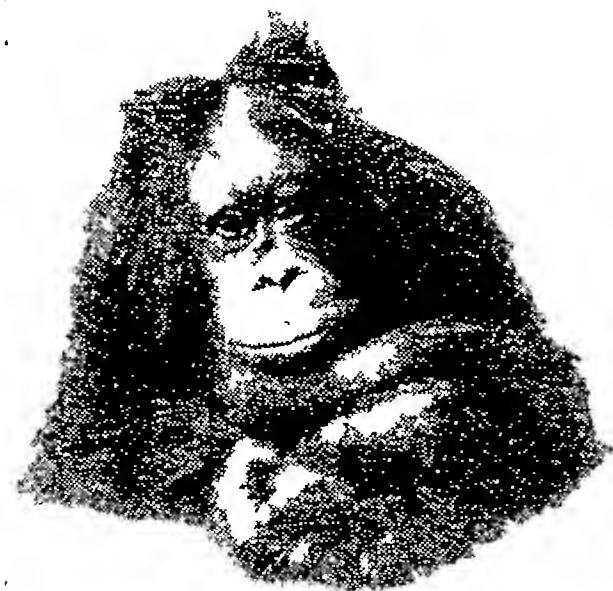
**Orange-tip Butterfly** (*Euchloe cardamines*). Butterfly of spring, common in British lanes, and distributed over Europe and a great part of Asia. It measures about 1½ ins. across the expanded wings. These on the upper side are mainly white with a black base, the tips of the fore wings being margined with black, broadly in the female, narrowly in the male, in which nearly half the wing is orange. On the under-side the hind wings are heavily blotched with green. When the insect alights on the clusters of small white flowers of Cruciferae or Umbelliferae and elevates its wings over its back, the hind wing appears to be part of the flower cluster and the butterfly is invisible as such. See Butterfly, colour plate.

**Orangism.** Political and religious movement. The Orange Institution was founded in Exeter cathedral on Nov. 17, 1688, to support William, prince of Orange (William III), and the principles of civil and religious liberty. After the battle of the Boyne, 1690, it appears to have become dispersed into a number of clubs and societies whose members were loosely called Orangemen, some of them set up in Ireland—e.g. the Bandon society, the Boyne society, the Britannic society. One, the society of the Blew and Orange, in the Fourth Regiment of Foot, which is known to have been in existence in 1727 and lasted until the formation of the Grand Lodge of England (v.i.), had many distinguished figures among its members.

During the troubled period in Ireland before the 1798 rebellion, Orangemen were reorganized on a masonic pattern, the first Orange Lodge being formed in co. Armagh on Sept. 21, 1795. The Grand Lodge of Ireland was formed on July 12, 1797; the Grand Lodge of

England in May, 1808; its second and third Grand Masters were the dukes of York and Cumberland, sons of George III (both of whom were already members of the society of the Blew and Orange).

In Ireland the society soon came into collision with the society of United Irishmen (which had as its object the overthrow of the English ascendancy), and was unjustly held responsible for violence committed in the name of the law in the suppression of the 1798



Orang Utan. Specimen of the man-like ape of Borneo and Sumatra, showing its characteristic attitude in the fork of a tree; top, crouching on the ground

rising. It opposed the Union of 1801, for union was expected to impair the Protestant ascendancy; and during the 19th century it strongly opposed Catholic emancipation.

The society has become world wide, and lodges exist wherever English is spoken. Its principles are to preserve civil and religious liberty, and to uphold the crown and the Protestant religion. Its London h.q. is at 85, Trinity Court, Gray's Inn Road, W.C.1.

**Orang Utan** (Malay, man of the woods). Species of anthropoid (man-like) ape (*Pongo pygmaeus*)

found only in Borneo and Sumatra. A full-grown male stands about 4½ ft. high, and its arms are so long that in the erect position the fingers almost touch the ground. The legs are short, and when walking the animal rests on the knuckles of the fingers and the outer edges of the feet, the soles being turned inwards. It thus progresses slowly on the ground, but in the trees it can swing itself along with fair speed, though it seems always to be moving with deliberation. The remarkable disproportion of the limbs distinguishes the orang from the gorilla and the chimpanzee; but, in addition, the skull is differently shaped, and the numbers of the vertebrae and wrist bones are different. In almost all its special anatomical features the orang is further removed from man than are the other large anthropoids.

The head of the orang is compressed from back to front, giving

the appearance of a high forehead, and the jaws project considerably. In old males ridges develop down the cheeks, and the skin round the neck is distended in such a fashion as to suggest goitre. The skin is covered with long, shaggy, reddish-brown hair, and old animals often have a full beard.

Orangs occur in the densest forests, and are usually found in families consisting of the two parents and a few young ones. They construct strong but rough nests of sticks in the trees, in which they pass the night. They feed by day, principally on fruit though they

also eat leaves and shoots. In captivity, young specimens are docile and affectionate.

**Oraon.** Aboriginal tribe of cultivators found in Bihar, Orissa, and Madhya Union, India. They call themselves Kurukh, and number some 700,000. There is a thin veneer of Hinduism over their essentially animistic religion which includes worship of visible objects, such as stones and posts. At their annual Khaddi festival, for ensuring good crops, their aboriginal deity, Dharmesh is symbolically wedded to Mother Earth. Their Dravidian language is allied to Khond.

**Orasul Stalin** (Stalin city). Name of Brasov (*q.v.*), 1948-56.

**Oratorians.** Familiar term for the R.C. Congregation of the Oratory of Our Lord Jesus Christ, and that of the Oratory of S. Philip Neri (*q.v.*). The first named was founded by Cardinal de Bérulle, at Paris, in 1611, composed of priests, and was instituted to deepen devotion, promote professional studies, and generally to strengthen ecclesiastical discipline. Its rule was adopted by the Oratory of the Immaculate Conception founded at Paris in 1852. The Oratory of S. Philip Neri dates from 1564. In 1575 it was given the old church of the Vallicella, Rome, on the site of which S. Philip caused a beautiful new oratory to be erected. The society is composed of priests without vows, but agreeing to a rule approved by Paul V in 1612. Each house is independent. It was introduced into Great Britain in 1847 by J. H. Newman, and its chief centres in England are at Birmingham and Brompton (*q.v.*).

**Oratorio** (Ital., first used at musical services given at the Oratory of S. Philip Neri). Sacred story or drama set to music, in which solo voices, chorus, and instruments are used. It occupies in sacred music the place that opera occupies in secular music, but is performed without scenery, costumes, etc.

About 1574, S. Philip Neri (*q.v.*) introduced into his Oratory in Rome the acting of sacred dramas, more refined than the medieval morality plays, and interspersed with sacred music. Hence the name, which is the Italian form of oratory. The earliest surviving oratorio is *The Representation of the Soul and the Body*, composed by Giulio Cavaliere and performed in the Oratory, 1600. The composer, who died before the first performance, left complete directions as to the performance, which

included dancing and gestures. No further development followed until Carissimi increased the importance of the chorus in two works, *Jephthah* and *Jonah*. A pupil, A. Stradella, reached a higher standard in *S. John the Baptist*, 1676. But oratorio in Italy gradually came under the same influences as determined the form and character of opera, the solo singers becoming increasingly important at the expense of the chorus.

#### Passion Music

In Germany the religious character of the people revealed in the Reformation was also seen in the special attraction which the Passion story had for them. The four settings of the Passion by Heinrich Schütz (b. 1585) mark a beginning in that special form of oratorio which led to the great Passions of J. S. Bach, though the earliest surviving example of German oratorio is Schütz's *Resurrection*, composed before his Passions. Bach's chief works in this form are his two Passions—*S. John*, 1723, *S. Matthew*, 1729—and his *Christmas oratorio*, 1733. The Passions of Bach differ from the ordinary oratorio form in emphasising important points of the story by the introduction of solos and choruses of a reflective and meditative character, also by means of chorales intended to be sung by the whole audience. Handel's oratorios were written as a form of musical entertainment, several being first produced at the same theatre as that at which his operas were produced. The majority follow more or less closely a particular Biblical story: *e.g.* *Israel in Egypt*, *Saul*, *His Messiah*, 1742, however, aims at a presentation of the whole scheme of salvation. The choruses are the great feature of Handelian oratorio.

Haydn's *Creation*, 1798, presenting a series of tone pictures, was the first oratorio in which orchestral accompaniment was treated on modern lines. In Spohr's *Last Judgement*, 1826, a still more modern feeling is emphasised by the free use of the chromatic harmony characteristic of this composer's work. Of Mendelssohn's three oratorios, *Hymn of Praise*, *S. Paul*, *Elijah*, the last, composed 1846, reveals most clearly the composer's complete mastery of the use of chorus and orchestra to secure vivid and dramatic effect. From his time the majority of oratorios have been written either by English composers or for English performance. Works in which the chorus is important have

always made a special appeal to Englishmen. The variety of scheme and treatment adopted by later composers is seen in Gounod's *Redemption*; Parry's *Job*; Elgar's *Dream of Gerontius*, *Kingdom*, and *Apostles*; Walton's *Belshazzar's Feast*. See Bach; Elgar; Handel; Mendelssohn; Messiah; Music; Passion.

**Oratory** (Lat. *orare*, to speak). The art of speaking in order to please or persuade the hearers. It first became a force in the Greek republics. In 4th century Athens the sophists (*q.v.*) made it their aim to teach oratory as a means to personal success. Eloquence was brought to its perfection, and Demosthenes, surmounting many physical disabilities, attained an excellence never surpassed. Under the Roman republic, public speaking became a leading means of acquiring power, honour, and distinction. Roman oratory was marked by method and stateliness, but lacked the spontaneity and sensitiveness of the Athenian; Cicero, by the magic of his style, stands alone. The first orator to receive a salary from the state as a public teacher was Quintilian, a pleader in Rome. He wrote instructively on the subject, explaining in his *Institutiones Oratoriae* what constitutes the well-graced orator. The artificial oratory of panegyrics and academic declamation was taught by professional rhetoricians such as Dion (*q.v.*) Chrysostom, until with the decline of the empire and the rise of Christianity a new form of eloquence, that of the pulpit, was established, of which S. John Chrysostom (*q.v.*) was a master.

During the Middle Ages oratory suffered from the dominance of scholastic rules, though some of the friars cultivated unconventional popular methods. In later times, although magnificent oratory was heard from the pulpit, the art became increasingly associated with parliamentary politics and the law courts. The 1st Earl of Shaftesbury, an earnest student of Cicero, was the first great parliamentary debater, creating a tradition that developed through the 18th century into the classic exercises of Pitt, Chatham, Sheridan, Fox, and Burke, which remained the model of parliamentary style until the 20th century. H. H. Asquith is sometimes said to have been the last parliamentary orator in the classic tradition.

If contemporary oratory shows a decline, it is largely because the spread of the reading habit has



rendered it to some extent superfluous. Sermons and parliamentary speeches alike have become ever shorter. At the same time, and perhaps inevitably, a certain mistrust of the orator's art has become apparent, so much so that one subtle method of practising it with success is to make a profession of disclaiming it, as did Mark Antony ("I am no orator"), Abraham Lincoln ("The world will little note nor long remember what we say here"), and the 1st Earl Baldwin, one of the most skilful and appealing orators of the 20th century—as well as the many lesser speakers who open their discourse with some variant of the well-worn phrase "Unaccustomed as I am to public speaking." The rantings of Hitler and Mussolini to the accompaniment of synthetic applause brought the art into further disrepute; and the broadcasting microphone has proved itself unkind to any speaker with pretensions to the traditional oratorical devices.

Contemporary public speaking tends to be brief and to the point, divested of rhetoric and dramatic vocal inflexion, though not of wit. Gesture and facial expression are reduced to a studied minimum. Nevertheless, so long as there is any occasion for public speaking, those who would be successful practitioners of the art will need to study its demands even if their artistry must remain concealed; while the born orator—a Lloyd George, a Birkenhead, a Winston Churchill, a W. J. Bryan, or a Franklin Roosevelt—may observe or ignore the prevailing canons as he pleases without ever failing to command attention. *See* Rhetoric.

**Oratory**, CONGREGATION OF THE. Roman Catholic congregation of priests, founded at Florence in 1556 by S. Philip Neri, popularly known as the Oratorians (*q.v.*).

**Orbit**. (*Lat. orbis*, a circle). Bony socket containing the eye (*q.v.*).

**Orbit**. In astronomy, the path of a heavenly body in space. The orbit of a body in the gravitational field of a central mass is a conic section: an ellipse, parabola or hyperbola. Neglecting small perturbations, the orbits of the planets are ellipses, while certain comets move in parabolic or hyperbolic orbits. At any given distance from the sun there is a definite velocity called the parabolic velocity which a freely falling body would acquire if it had entered the gravitational field of the sun from an infinite distance. Any body moving in any

direction with exactly this critical velocity will move around the sun in a parabolic orbit: if it moves faster than this, it will describe a hyperbola; if slower, an ellipse. The branch of astronomy dealing with orbits of planets and comets is known as celestial mechanics.

In atomic physics, the hypothesis of electrons moving in orbits round the positive nucleus forms the basis of Bohr's theory of the hydrogen atom. Bohr made two fundamental postulates, *viz.* that (1) only those orbits are permissible for which the angular momentum of the electron is a whole multiple of  $h/2\pi$  where  $h$  is Planck's constant; and (2) the atom radiates energy only when an electron jumps from an orbit of higher to one of lower energy. This theory was later modified, and for many purposes electrons came to be thought of more vaguely as occupying "shells", "energy levels", or "orbitals", rather than specifically travelling round orbits. The values of these can be calculated by wave mechanics.

**Oragna**. Name sometimes given to the Italian sculptor Andrea di Cione (*q.v.*).

**Orchard**. Plot of land devoted to the cultivation of fruit trees which are generally grown as standards. As these will not yield freely until well developed it is good practice to set bush-shaped trees, budded on a dwarfing stock, as well as soft fruits, among them; these will come into bearing while the standard trees are growing up. When no longer profitable owing to the encroachment of the standards they are uprooted. The best site for an orchard is on well drained loamy ground sloping gently to the south-west and protected from north and east. Nut, plum, and damson make good shelter trees. An orchard should not be planted on low-lying land among hills or in a bleak position where spring frosts may damage the blossoms. For the first 8 or 10 years the soil must be kept clear of grass and weeds for 3 or 4 feet round the tree stems. Standards must be staked securely and wired against rabbits; they are planted 25 feet apart, bush-shaped trees 12 feet, and gooseberry and currant bushes 5 feet from each other. *See* Fruit Farming.

**Orchard-house**. Name given to a glass-house in which fruit trees, grown in large pots or planted in a border of soil, are cultivated. The best type of glass-house for this purpose is the span-roof. Fruits suitable for the

orchard house are peach, nectarine, cherry, apricot, fig, grape, and choice varieties of apple, pear, and plum. If the trees are grown in pots they may be placed out of doors after the fruits have been gathered, thus leaving the glass-house free for salad crops, tomatoes, and chrysanthemums; the trees must be replaced under glass by December.

**Orchardson**, SIR WILLIAM QUILLER (1835–1910). British painter. Born in Edinburgh. March 27, 1835, he studied at the Trustees' Academy, and settled in London in 1862. He became A.R.A. in 1868, R.A. in 1877, and was knighted in 1907. He painted historical genre



Elliot & Fry

with a definite aesthetic motive; but the oft-repeated brown tone of his pictures later developed into a mannerism. His most famous picture is that of Napoleon on board H.M.S. Bellerophon, now in the Tate Gallery. He also painted portraits, especially during his later years. He died April 13, 1910.

**Orchestra** (*Gr. orchesthai*, to dance). Musical term. Before 1720 it was used only in its Greek sense, meaning the place in the theatre where the chorus danced. Although records of concerted instrumental music go back to antiquity, there is no evidence to show that these concerted efforts were anything more than a haphazard collection of instruments without thought of balance or the niceties of instrumental colour and sonority. Even as late as the 16th century, usually described as the golden age of polyphony, a band of instrumentalists used for some ceremonial occasion or as an accompaniment to church choral music might vary from a collection of trombones, cornetti (an obsolete wood and ivory instrument bearing no resemblance to the cornet), violas, and bassoons, to a band consisting of viols, violins, lutes, lyres, harps, trombones, recorders, oboes, and organs. In the actual writing for these bands of instruments there was little or no feeling for instrumental style; in fact, when instruments were added to a choir they merely doubled the vocal parts.

The beginning of opera and the demand for intensified dramatic

expression in the music brought about the creation and early development of the modern orchestra. In fact, it may be said that opera has been a constant spur to the expressive potentialities of the orchestra. The first great composer of opera was Monteverde (1568-1643), who realized the possibilities of colour and helped to create balance and organization in instrumental bands or groups. The 17th century was a period of experiment during which composers gradually and somewhat laboriously evolved a definite style in writing for the strings and laid foundations of a string orchestra divided into either three or five parts, eventually giving way to a four-part division. With the emancipation of the cello a century or more later, the string section of the modern orchestra was divided again into five parts.

It took nearly another century to establish a cooperative, but at the same time independent and flexible, wind section of the orchestra. At first the addition of wind instruments to strings was governed by the necessary but haphazard method of using what instruments happened to be available. What is important to remember is that during the 18th century the actual style and texture of music itself was undergoing a change—a change from the polyphonic to the harmonic style, from the vocal to the instrumental style.

The new style of music (the classical style, we call it) with its appropriate new forms, *e.g.* the symphony, was brought to its highest stage of perfection by Haydn and Mozart, who established the principles of modern orchestration and a finely balanced instrumentation of the concert orchestra itself, consisting of two flutes, two oboes, two clarinets, two bassoons, two horns, two trumpets, drums, and strings in four parts (cellos and basses almost invariably playing the same part at the interval of an octave). However, it must not be forgotten that the great contributions of Haydn and Mozart to the development of the orchestra would not have been possible if the ground had not been well prepared for them by the work of a host of talented and industrious forerunners, notably Bach's two sons—C. P. E. and J. C. Bach—and a group of composers, headed by Carl Stamitz, which flourished in Mannheim during the middle years of the 18th century.

In opera the French Rameau and the German Gluck were responsible for many innovations,

particularly Gluck, who evolved not only a true orchestral style as distinct from his vocal style, but realized and experimented in the potentialities of instrumental colour and dramatic expression. In the preface to his opera *Alceste* he claimed that instruments ought to be used "in proportion to the degree of interest and passion in the words." Gluck was one of the first to realize the possibilities of the clarinet, which was then a new instrument. He also added trombones and more percussion instruments to his orchestration. The two outstanding characteristics of his orchestral style were the greater independence and individuality given to each section of the orchestra and the fuller and richer use of harmony.

Haydn and Mozart also introduced the clarinet in their later symphonies, but it was not until Beethoven wrote his Fifth Symphony (1804) that trombones were used in the concert orchestra. Beethoven treated the orchestra very sensitively, and much of what awkwardness there may be in his writing is due to mechanical defects of the instruments at his disposal, such as the horn.

#### Nineteenth-century Development

During the first half of the 19th century the range and flexibility of the orchestra was considerably increased by a generally higher standard of string playing, the emancipation of first the cello and then the viola as melody instruments in their own rights, and by the improvements in the valve mechanisms of wood-wind and brass instruments.

Weber, the first German Romantic composer of opera, showed a wonderful sense of orchestral tone colour, and he used the instruments of the orchestra, both singly and in combination, as an artist uses his palette. He was, however, surpassed by the French Berlioz, who was one of the most original minds in the development of the art of orchestration.

The still further extension of harmonic resources and the increase of virtuosity in all instrumental technique combined to offer in the orchestra a magnificent medium of expression to composers of the second half of the 19th century. Wagner used the orchestra in his great music-dramas with the power, imagination, and skill of genius. Like his younger contemporaries, Rimsky-Korsakov, Debussy, Mahler, Strauss, and many others, Wagner conceived his music in terms of the orchestra,

and not as a kind of transcription or arrangement of some pre-existent host of ad libitum string or piano tones.

Masters of the orchestra in the 19th century were composers, both contemporary and historical, and distinctive signatures and timbres have been constantly added, notably by Berlioz, Schubert, Ravel, Schumann, Bartók, Berg, and Rutter.

The tendency in the development of the orchestra from Baroque to Romantic has been the increase of size and complexity. In the 18th century and the first half of the 19th century, orchestras varied in size and instrumentation according to the wealth and importance of their patrons. At Leipzig in 1730 Bach's orchestra consisted of six first and second violins, two violas, two cellos, one bass, two flutes, two oboes, one bassoon (in appearance), and two trumpets. At London in 1791 the orchestra for the famous Salomon concert, in which Haydn wrote twelve symphonies, consisted of twelve (or sixteen) first and second violin, four violas, three cellos, four basses, two flutes, two oboes (clarinets probably engaged when needed), two bassoons, two horns, two trumpets, and one set of drums. In 1841 the Berlin Opera consisted of eighty-two players including two harps and four each of all wind and brass instruments. Finally in 1939 the BBC Symphony Orchestra consisted of about one hundred and ten players.

Malpich 30

**Orchestration on Instruments.** In music, the art of planning music for the orchestra, allotting to each instrument its most suitable duties in view both of its tone and its technique. See Full Score, Instrumentation, Orchestra, consult also A Treatise on Modern Instrumentation, 1 Berlioz, Eng. trans. M. C. Clark, new ed. 1904.

**Orchha.** Town and former state of India, now in the Vindhya union. The state lay between the Jann and Dhawan rivers between Jhansi and Chhatarpur. Its area was 1,900 sq. m. Pop. 363,46. The town, the former capital of the state, is situated on the Betwa. An imposing fortress is connected with the town by a wooden bridge.

**Orchid.** Family of plants found wild, chiefly in tropical countries. The number of species or wild types runs into thousands. The flowers are extraordinarily varied in shape and size and many of them are exquisitely coloured.



Some, classed as epiphytes, are found on trees; others, known as terrestrial, grow in the soil. The growth is often in the form of a thick, flattened, stem-like structure called a pseudo-bulb, from which the leaves are produced. Almost all kinds must be, in cooler climates, cultivated under glass, those from a tropical climate in a minimum temp. of 65° F. at night and rising much higher by day.



Orchid. 1. Green-winged orchid, *O. morio*. 2. Flower of Butterfly orchid, *Habenaria bifolia*. 3. Fragrant orchid, *Gymnadenia conopsea*

Those native to high altitudes are grown in a glasshouse having a minimum temp. of 50° or even 45° F. Others are suited by the temp. of a warm or intermediate glasshouse where the temp. does not fall below 60°.

Most orchids can be grown to perfection only in glasshouses specially built, where they have expert care. A few, however, will flourish in an amateur's greenhouse among other plants needing warmth. Watering, ventilation, and keeping the air of the glasshouse moist are important details of cultivation. When growth for the year is complete orchids need watering less frequently, but the ventilators must be managed so that draughts are prevented. To prevent the air in the glasshouse from drying out it is usual to cover the staging with shingle and to keep this moist by syringing.

The difficulty of obtaining fuel for heating greenhouses not devoted to food crops led, during and after the Second Great War, to a reduction in the collections of hot-house plants including orchids, while the importation of orchids

steadily declined. Some of the orchids which may be grown successfully in an amateur's warm greenhouse are lady's slipper or cypripedium, some of the cattleyas, odontoglossum, dendrobium, cymbidium, lycaste, coelogyne, and masdevallia.

Although the wild types of orchids number many thousands through crossbreeding by professional and amateur growers of some genera, e.g. cymbidium, cypripedium, and cattleya, the hybrids raised artificially outnumber the species introduced from abroad. Established orchids are repotted at various periods of the year, the best time being when fresh root growth is seen. It is unnecessary to repot them every year.

The terrestrial orchids, e.g. cypripedium, lycaste, and coelogyne, are grown in well-drained pots

in a compost of three parts loamy soil, one part of osmunda fibre, one part of sphagnum moss, and a free scattering of small pieces of broken flower pot. A compost which suits cattleya, laelia, and a number of other popular kinds consists of three parts osmunda fibre and one part sphagnum moss; free drainage is most necessary. Some kinds, e.g. vanda, acrides, oncidium, can be grown in suspended baskets.

The hardy orchids, some of which grow wild in Great Britain, are smaller and far less showy than those cultivated under glass. Most of them need to be planted in loamy soil in cool, slightly shaded places in the rock garden. One of the finest is the Madeira orchid (*Orchis foliosa*). Another striking flower is the North American *Cypripedium spectabile*, which needs peat and leaf mould but not shade. The butterfly orchid (*Habenaria*), the bee orchid (*Ophrys apifera*) are two attractive native species. Others are the early purple *Orchis mascula*, commonest of all, the spotted *Orchis maculata*, the green man orchid (*Aceras*), and the sweetly-scented *Gymnadenia conopsea*.

**Orchis** (Gr., testicle). Large genus—about 70 species—of herbs of the family Orchidaceae. They are natives of Europe and Asia, and a few of N. America. They have usually a pair of egg-shaped tubers, which suggested the old Greek name; in some species these are flattened with finger-like prolongations (palmate). The annual stem is wrapped around by the few strap-shaped leaves, which sometimes are spotted or blotched, and ends in a spike of irregular flowers, which by the twisting of the ovary are reversed.

Of about a dozen British species the best known are the early purple orchid (*O. mascula*) and the spotted orchid (*O. maculata*). The former, which appears in April in copses and pastures, has the typical oval tubers and the leaves spotted with purple-black. The flowers and the upper part of the stem are red-purple. *O. maculata* has the tubers flattened, and the flower-spike more pyramidal, the flowers pale lilac marked with streaks and curved lines of purple. The pyramidal orchid, handsome but evil smelling, grows on limestone. See Bee Orchid; Butterfly Orchid; Ophrys; Orchid.

**Orcus**. In Roman mythology, name of the god of the lower world, subsequently identified with Hades or Pluto. Orcus is also used for the lower world itself. See Hades.

**Orczy**, EMMUSKA, BARONESS. (1865–1947). British novelist and playwright. Born at Tarnaörs, Hungary, daughter of Baron Felix Orczy, she was educated at Brussels and studied painting in London. In 1905 she published *The Emperor's Candlesticks*, also (after its rejection by 12 publishers) a tale of the French Revolution, *The Scarlet Pimpernel*, dramatised in collaboration with her husband, Montague Barstow, and produced by Fred Terry and Julia Neilson at the New Theatre, London. The play's success brought immense sales for the book, which was followed by many sequels during the ensuing 30 years. She wrote many other "cloak and sword" romances, and three other plays, though none of the latter attained any comparable triumph. She died Nov. 12, 1947, shortly after the publication of her memoirs, *Links in the Chain of Life*. See *Scarlet Pimpernel*.



Baroness Orczy,  
British novelist  
Russell

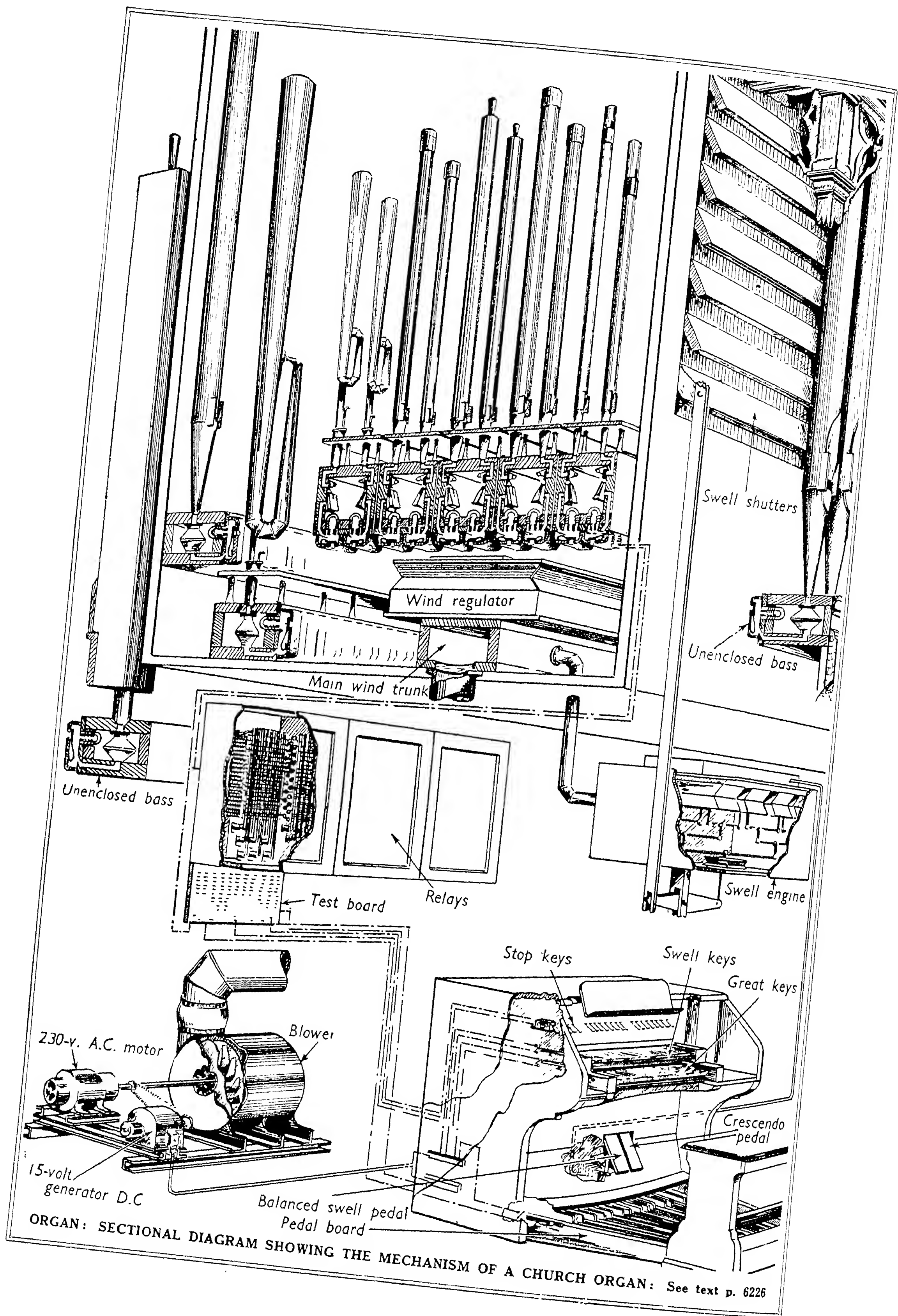


1. *Orchis maculata* (Spotted Orchis), Europe, N. Asia, Himalaya. 2. *Cypripedium sanderianum* (Sander's Lady's Slipper), Malayan Archipelago. 3. *Cattleya labiata*, variety *Dowiana*, Costa Rica. 4. *Paphiopedilum glaucophyllum*. 5. *Vanda sanderiana* (Sander's Vanda),

Philippines. 6. *Disa grandiflora*, South Africa. 7. *Zygopetalum lawrenceanum*, Colombia. 8. *Oncidium papilio*, variety *majus*, Trinidad. 9. *Odontoglossum crispum*, variety *mundyanum*, Colombia. 10. *Miltonia spectabilis*, variety *Moreliana*, Brazil.

**ORCHID : RARE AND COMMON VARIETIES SHOWING FANTASTIC FORM AND COLOURING**





**Ordainers, LORDS.** Body of 21 peers appointed in 1310, by a parliament consisting of peers only, to amend the unsatisfactory government of Edward II. It was arranged that they should administer affairs for 18 months and then formulate proposals. These proposals, known as the ordinances of 1311, secured the expulsion of Gaveston, the king's disreputable favourite, and of other foreigners, various limitations of the royal power, and the summoning of Parliament once a year. See Edward II; England: History.

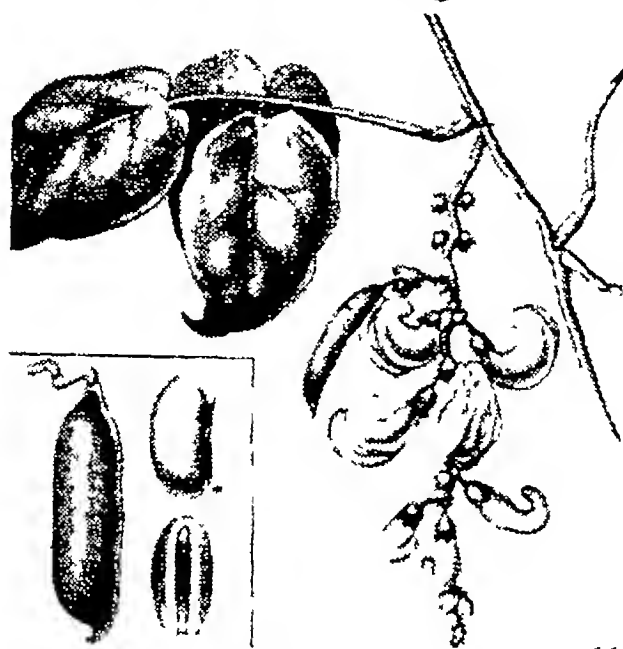
**Ordeal.** Ancient form of trial *per Dei judicium*, by judgement of God. The underlying belief that Divine providence would intervene to protect the innocent from unjust condemnation is of remote antiquity and universal distribution. A test of innocence of infidelity by drinking bitter water mixed with dust from the floor of the tabernacle (Numbers 5) shows that the practice was in use among the Jews. That it obtained among the ancient Greeks is proved by a passage in Sophocles' *Antigonē*, where the watchman protests his readiness to hold red hot iron in his hand and walk through fire, to prove his innocence of Cleon's charge of having given Polynices proper burial.

Among the Anglo-Saxons the test generally took one of four forms: ordeal by battle; ordeal by fire—either by handling hot iron, or walking blindfold and barefoot over red hot ploughshares placed at irregular intervals: by hot water, when the suspect plunged his arm up to the elbow into boiling water; or by cold water, when the suspect was flung into a stream or pond and, making no effort to swim, either sank, when he was deemed innocent, or floated, in which case he was convicted and punished.

Legal ordeals were abolished in England under Henry III, with the exception of trial by battle, which actually survived on the statute book until 1818, when it was abolished in consequence of the right to trial by battle being claimed by a man charged with murder. Swimming, or floating, was the common method of testing witches until the 18th century, the women being bound right thumb to left toe and left thumb to right toe, in which position they could not keep themselves afloat, and were left to the judgement of heaven. See Divination; Duel; Trial by Battle.

**Ordeal Bean** (*Physostigma venenosum*). Perennial climbing herb, member of the family Legumi-

nosae, native of tropical Africa. The leaves are broken into three leaflets. The purple, bean-like flowers are in sprays, and are succeeded by dark-brown pods containing two or three large blackish



**Ordeal Bean:** foliage and flowers. Inset, seeds, showing the hilum or deep groove

or brown seeds with a deep groove (hilum) along one side and around one end. These seeds are extremely poisonous, and are employed by the natives of Old Calabar as an ordeal for those suspected of witchcraft. The suspect has to eat beans until he vomits and so prove his innocence, or he dies, and so proves his guilt. It has been found useful in ophthalmic surgery for contraction of the pupil of the eye.

**Ordeal of Richard Feverel,** THE. Novel by George Meredith (*q.v.*), first published in 1859 with the sub-title of *A History of Father and Son*. The earliest of its author's series of fiction studies of modern life, this story is by some critics regarded as on the whole the greatest of them. Its theme is the danger of applying academic theories to education for practical life. The story represents the best qualities of Meredith as a novelist, his wit, humour, poetry, and rare skill in psychological analysis.

**Order** (Lat. *ordiri*, to begin). Word used in several senses. Its prime meaning is that of a series or row, hence an order or regular arrangement. From this came the idea of obedience, and so we have the use of the word for a command.

To-day an order means a class of persons united together in some way. Such are the orders of knighthood and other orders of the same kind, which do not carry the honour of knighthood, the order of merit, for instance, and the monastic and other religious and semi-religious orders. (See Knighthood; Merit, Order of; S. John of Jerusalem: Knights Templars, etc.)

In the sense of a command the word is frequent in military and naval language, for instance, close order, fighting order, sealed orders, etc. The same idea is seen in

ecclesiastical matters, the order of service and the phrases Holy Orders and minor orders being examples. It is the same in business, in such phrases as payable to order. In a related sense order implies good and peaceable conditions, *e.g.* public order and to maintain order. (See Holy Orders.)

In natural science, especially in zoology and botany, an order refers to a number of genera having important points in common. It is thus intermediate between a class and a family. In architecture, an order is one of the different ways in which the column, with its various parts and its entablature, are moulded and related to each other. There are three main orders, Doric, Ionic, and Corinthian, and two minor ones, Tuscan and Composite. See Architecture; Column; Corinthian Order; Doric Order, etc.

**Ordericus Vitalis** (1075–1142). Medieval chronicler. Born near Shrewsbury, England, Feb. 16, 1075, the son of a French priest and an English mother, he passed the greater part of his life in the Norman monastery of St. Evroul. About 1123 he began to write the history of the monastery, but this was soon expanded into a general history, although described as *Historia Ecclesiastica* only. He had good sources of information about England as well as France, and the part of his work which deals with his own age, the eighty years after the Norman conquest, is a valuable contribution to the history of the two countries. It has been edited by French scholars and translated into English.

**Order - in - Council.** In the United Kingdom, and also in Canada, Australia, and other parts of the British Empire, an order issued by the sovereign on the advice of the privy council. It is thus a method of legislation, having taken the place of the proclamations issued by the Tudor and later sovereigns.

The place of orders-in-council in the parliamentary system is maintained by a fiction. Theoretically they are issued by the advice of the privy council, but in practice, on the advice of only a few of its members, who are also members of the Government, and as such responsible to Parliament. These orders were first issued in the 18th century, and a notable instance was in 1807–8, when by them all vessels were forbidden to trade with ports under French control. (See Berlin Decree.) They were extensively used during both Great Wars, especially for matters of urgency. Orders-in-Council are used to carry out Acts of Parliament. Towards



the end of the nineteenth century, owing to the mass of new legislation, the custom sprang up of drafting Acts of parliament in very general terms, giving very extensive powers to ministries to formulate the details as they thought best, and carry them out by issuing orders-in-council. See Statutory Instrument.

**Orderly.** Name given in the British army and air force to a soldier or airman who serves as a messenger or attendant. Orderlies are attached to squadron, battalion, company, or other unit headquarters, while others attend officers on duty. Hospitals, sick quarters, and dental centres have orderlies to assist the medical officers. Every unit of squadron or company strength upwards has an orderly sergeant and orderly corporal who do duty on rota and are responsible for routine duties such as parades, guards, etc., over a period of 24 hours. An orderly officer is an officer who is on a 24-hour duty and is responsible during that period for administrative routine. The office dealing with the clerical work of a unit is called the orderly room.

**Ordinal Numbers.** Name given to those words used to indicate the position of something in a sequence. First, second, third, etc., are ordinal numbers. One, two, three, etc., are called cardinal numbers, though the latter are also used as ordinals, *e.g.* in numbering the pages of a book.

**Ordinance** (Fr. *ordonnance*). Edict used by authority. Specifically, the term is applied in Great Britain to an Act of parliament not sanctioned by all three estates of the realm, *e.g.* the self-denying ordinance (*q.v.*) passed by the Long parliament in 1645 at Cromwell's instigation. Temporary Acts of parliament and Acts which are merely declaratory are also called ordinances. The edicts issued by the kings of France from the time of Philip IV until the Revolution in their own name, and having the force of laws, were termed *ordonnances*. The ordinances affecting the press and the reconstruction of the chamber of deputies issued by Charles X, July 26, 1830, were the immediate cause of the revolution and his enforced abdication, Aug. 2, 1830. In its connotation of an established rule or rite the word ordinance is also used, especially by Presbyterians, of the sacraments, as the ordinance of baptism. See Ordainers. Lords.

**Ordinary.** In heraldry, the commonest charge. They are

mostly plain symbols, composed of broad bands. They are among those found on the earliest feudal coats, and by old writers are referred to as the "honourable ordinaries." They are supposed to occupy one-third of the shield, but generally are given less space. Most of the ordinaries have "diminutives," usually smaller representations of the parent charge. The first diminutive occupies half the space of the ordinary, and so they diminish by half at each step.

The names of the ordinaries are chief, pale, or paller, bend, bend sinister, fess or fesse, chevron, cross, saltire, quarter, and pile.

All ordinaries and most of their diminutives may be charged, *i.e.* ornamented with another ordinary, a diminutive, or some other figure; and they can also be "surmounted," *i.e.* another ordinary, or an animal or monster, may be placed over them. On the other hand, an ordinary may surmount some ordinary charge. Most of them may be "voided," *i.e.* only a border is shown, the tincture of the field showing between. See Heraldry, colour plate.

**Ordinary.** In ecclesiastical law, an ecclesiastic who exercises jurisdiction within a given district. In England it usually means the bishop of the diocese or his chancellor acting by his authority. The expression Ordinary of the Mass means the fixed portion of the service as distinguished from the variable parts—such as collects, gospels, etc.—proper to special occasions. In common parlance, it is applied to the service generally, with the exception of the canon, which consists of the prayer of consecration and its adjuncts. See Bishop.

**Ordinary Shares.** The shares in the capital of a limited company which are entitled to dividend, and, in liquidation, to repayment, only after the claims of debentures and fixed interest preference shares. There may be two classes of ordinary share, the superior being then designated preferred ordinary shares and the inferior either deferred ordinary or merely ordinary. While a higher class of share thus takes preference over the ordinary share from both an interest and capital point of view, it is important that, after the claims of the fixed interest shares and debentures have been satisfied, the whole of the remaining profits available for distribution, and the remaining assets, belong to the ordinary shareholder. In a successful concern he frequently re-

ceives a much higher rate of interest and possesses a far higher proportion of the assets of the concern than does the holder of shares of a superior class. For that reason the price quoted on the Stock Exchange for ordinary shares (or units of ordinary stock) in the capital of a company often exceeds many times the price quoted for the same company's debentures or preference shares.

**Ordinate.** In mathematics, the length of the straight line drawn from any point parallel to one of a pair of Cartesian coordinate axes, to meet the other axis. See Coordinates.

**Ordination.** Ecclesiastical rite in which Holy Orders are conferred upon deacons and priests. In the Greek, Roman, and Anglican communions the rite includes the laying on of hands by a duly consecrated bishop; in the Presbyterian churches the ordination is by the Presbytery. The subject is one of great controversy associated with the Apostolic Succession (*q.v.*).

Since the beginning of the 17th century the validity of Anglican orders has been contested by the Roman Catholic church. On Sept. 18, 1896, Leo XIII issued a Bull, *Apostolicæ Curæ*, pronouncing that ordinations performed by the Anglican rite have been and are utterly invalid and altogether void; to which Archbishops Temple and Maclagan replied, Feb. 19, 1897. For some 40 years the Anglican succession derived from Matthew Parker (*q.v.*), and a crucial point of the controversy is the validity of his consecration.

Deacons and priests are ordained on the four Sundays following the Ember Weeks, the canonical ages being 23 for deacons and 24 for priests. Ordination is a sacrament in the Greek and Roman churches. See Holy Orders; Thirty-Nine Articles.

**Ordnance.** General designation of all weapons of warfare of greater calibre than a rifle. More specifically, and in the British army, the term ordnance includes the provision, storage, distribution, and maintenance of arms and ammunition of all kinds, personal and camp equipment, vehicles and armour, clothing, and all stores except food. A special unit, the Royal Army Ordnance Corps (*q.v.*) is responsible for all these duties except the maintenance of guns, armour, and electrical equipment, which is the responsibility of the Royal Electrical and Mechanical Engineers (*q.v.*). Similar services are

provided for the navy by the directorate of naval ordnance, and for the R.A.F. by equipment and maintenance units.

**Ordnance Artificer.** Non-commissioned officer of the British navy. The branch to which he belongs was established in 1919, to provide personnel to maintain naval armament. Men are enrolled as chief ordnance artificer and ordnance artificer, and are given the status of chief petty officer. *See* Armour, Naval; Armourer; Artificer.

**Ordnance Board.** A British advisory committee of experts in armament. Officers from all three services are detailed to act on the committee, which also includes civilian scientists. Its functions are to consider inventions relating to both weapons and ammunition, suggest suitable designs for specific purposes, investigate failures and accidents, and advise the authorities on all questions of ordnance manufacture and practice.

**Ordnance Factory.** Factory maintained by the British govt. for the manufacture of armaments and other war material required by the army and navy, and ammunition for the R.A.F. During the Second Great War large numbers of additional factories were built by the ministry of Supply and operated directly by the govt., while others were erected by the govt. and the production in them carried out by private firms engaged on govt. contracts. Factories building aircraft for the R.A.F. came under control of the ministry of Aircraft Production. *See* Munitions.

**Ordnance Survey.** A topographical survey of the U.K. In 1747, following the Jacobite rebellion of 1745, General Watson organized the making of a map of the Highlands, but the ordnance survey cannot be said to have come into existence until 1784, when General Roy measured a base line on Hounslow Heath. \*

An ordnance survey department was established in 1791 under the joint direction of the Master Gunner (*q.v.*) and the ordnance department to prepare a map of Great Britain on a scale of one inch to the mile. Civil recruitment was introduced in 1824, when a 6-in. survey of Ireland was begun. The office of works took it over in 1870, and the board of agriculture in 1889. It is now administered by the ministry of Agriculture and Fisheries, but the director general has always been a military officer and R.E.

officers have always been in charge of the actual field work. Maps of Ireland are no longer issued by the organization, but it issues maps of Great Britain on a number of scales, based on the 1/2,500 survey—25 ins. to the mile, commenced in 1855, and completed about 40 years later, and since constantly revised. The ordnance survey also carries out surveys for land registration, tithe redemption, and work for the War office and Air ministry. It examines documents and maps relating to administrative and other boundaries for other ministries. The largest scale maps are the cadastral maps on the scales of 1/2,500 and 1/10,560, *i.e.* the 25-in. and 6-in. maps, and the 5 ft. and 10 ft. to the mile maps. The 6-in. map is a reduction of the 25-in.

The maps on the scales of 1/63,360, 1/126,720 and 1/253,440, *i.e.* the 1-in., ½-in., and ¼-in. to the m. maps respectively, may be termed topographical maps. They show the natural features of the country, as well as towns and villages, railways, roads, canals, bridges, telegraph lines, etc. Unlike the cadastral maps, they do not show the property boundaries. The best known is the 1-in. map, the standard British topographical map. It is issued in three forms, of which that printed in colour and showing relief by means of contours and hachures is perhaps the best example of a British ordnance map. The smallest scale maps are the 1/633,600 and 1/1,000,000.

**Ordovices.** Celtic tribe inhabiting a large part of N. Wales at the time of the Roman occupation of Britain and subdued by Agricola in the 1st century A.D.

**Ordovician.** Name given to the geological period following the Cambrian and preceding the Silurian. One of the lower Palaeozoic systems, it lasted from about 400 million to 350 million years ago. It was named after the ancient British tribe of Ordovices who inhabited the Welsh borderland, because Ordovician rocks occur in Wales, as also in the Lake District, S.W. Scotland, and the S. edge of the Highlands. They are mainly grits, greywackes, shales, limestones, and volcanics which filled a subsiding trough trending N.E.—S.W. In Shropshire sandy types which were indicative of shallow water were deposited near the edge of the trough.

The period is divided into the following rock-series, in ascending order: (1) Skiddavian or Arenig; (2) Llanvirnian; (3) Llandeilian;

(4) Caradocian; (5) Ashgillian. These last two used to be grouped together as Bala. Each series is subdivided into two or three zones based on their fossil graptolite content. Volcanic activity was violent during this period. Starting in S.E. Carmarthenshire and Scotland during the Llanvirnian, it continued in N. Wales, the Berwyns, and Shropshire, and finished in the Lake District during the Ashgillian. Snowdonia and the Lakes owe their rugged mountains to the resistance to erosion of the massive volcanic rocks poured out or injected during this period. The Ordovician rocks were folded at the end of the Silurian. Slate valuable for roofing was formed then, especially in Wales and the Lake District, and ores of iron, lead, zinc, copper, barytes, and graphite were deposited in these rocks.

**Ordzhonikidze.** *See* Jaujika; and under Orjonikidze.

**Ore.** That part of a geological body from which the metal or metals that it contains may be extracted profitably. Local usage has adopted many words as substitutes for ore; dirt, pay-dirt, wash, rock, mineral, etc. An ore is nearly always a mineral aggregate, consisting of valuable constituents, ore minerals, and worthless constituents or gangue (*q.v.*).

The richness or tenor of an ore is variable; the following are minimum tenors of various ores which can be profitably extracted, given reasonable prices and working and transport costs: iron, 30 p.c.; copper, 1.5 p.c., occasionally 0.5 p.c.; lead, 5–6 p.c.; zinc, 3 p.c.; silver, 15 oz. per ton; tin, 1 p.c., though less if the metal occurs in a placer deposit. *See* under the names of various metals, *e.g.* Copper Ores; also Ore Deposits.

**Öre.** Bronze coin of Denmark, Norway, and Sweden; the one-hundredth part of a krone (*q.v.*).

**Örebro.** Sixth town of Sweden, capital of the inland co. of the same name. It is a port of inland navigation at the W. end of Lake Hjälmars, 104 m. W. of Stockholm, and exports minerals from the local iron, silver, and copper mines and the tobacco, matches, paper, boots and shoes, and machinery manufactured in the town. An important rly. junction with a connexion to Oslo, it has the chief state rly. workshops. The ancient castle, now used as a museum, is in the section of the town built on an island in the Svarta Elf river; the town hall and an old church are other buildings of note. There is a state technical college. The town



was long the place of assembly of the Swedish diet, which in 1529 made Lutheranism the state religion. Pop. (1955) 71,418. Örebro co. covers 3,560 sq. m. and had an est. pop. in 1955 of 256 200.

**Ore Deposit.** A geologic body containing a valuable mineral or minerals. All the metals and many of the materials which are of service to man are obtained from mineral deposits occurring in the earth's crust. Such deposits can be grouped into two main classes, syngenetic and epigenetic.

**SYNGENETIC DEPOSITS.** These are formed at the same time as the enclosing rock. Magmatic segregations (*q.v.*) are one type of syngenetic deposit. Sedimentary deposits, such as bog iron ore, are another. Material is dissolved from rocks by water and carried in solution to lakes and sea where reprecipitation occurs. In this way vast masses of dolomite (calcium magnesium carbonate) have been laid down, and where iron carbonate has been precipitated in large quantity bog iron ore and the clayband and blackband ironstones occur. Saline residues are formed by the drying up of enclosed basins of salt water; the great German deposit of chlorides and sulphates of sodium, potassium, magnesium, and calcium at Stassfurt is a striking example.

It is considered that stream waters containing copper sulphate leached from the neighbouring land surface deposited their copper as sulphide in neighbouring lakes and bogs to form the copper deposits of Mansfeld, also those in Germany. A similar syngenetic theory of origin is held by some for the famous Rhodesian copper field. In these cases it is considered that certain bacteria probably assisted in the deposition. Vast phosphate deposits called guano have been formed from the skeletons of fish and phosphate-bearing bird droppings. Coal is a sedimentary deposit.

Residual deposits, including alluvial or placer deposits, are of similar type. The tropical weathering of aluminous rocks, often igneous but not necessarily so, may give rise to deposits of bauxite (hydrated aluminium oxide) by the removal of the more soluble constituents. Often such deposits contain iron hydroxides and are called laterite. Alluvial deposits of gold and tin are formed by the removal of the lighter minerals during erosion, the heavy gold and tin tending to remain behind.

**EPIGENETIC DEPOSITS.** These are formed later than the enclosing rock by deposition from mineral-bearing solutions, the ore-fluid, usually in fissures in the host rock. The mineral veins or lodes so formed are of great length and depth compared with their width.

Faults and shear-zones are common kinds of fracture in which veins occur; joints and solution cavities also provide favourable channels for the ore-fluid. The vein-minerals may be deposited in open fissures or they may grow by replacement of the wall-rock. Replacement, or metasomatic, ore-bodies are not always localised along fissures, but may form huge, irregular masses replacing the country rock.

#### Rock Melt Deposits

Many epigenetic ores are associated with sub-acid and acid rocks, granodiorite and granite respectively. The magmas, or rock melts, from which some of these rocks have been formed, often contain appreciable quantities of volatile constituents, principally water, with boron, fluorine, sulphur, etc. Some of these constituents escape from the magma at an early stage in the consolidation of the melt, but the most important ore-formers appear to be released at a late stage when crystallisation is nearly complete and the ore metals have been concentrated in the final fluid residuum. According to the conditions in which the volatile fractions escape and are caused to deposit the minerals they hold, so various types of ore deposit are formed.

When the magma residuum reaches a pegmatitic condition (*i.e.* a water-rich silicate melt), in certain conditions pegmatitic deposits occur. These are, characteristically, very coarsely crystalline dykes rich in feldspar and quartz, and containing rare minerals, such as cassiterite, columbite, tantalite, beryl, monazite. Such deposits are found, *e.g.* in Dakota, U.S.A., and in central Nigeria.

The earliest solutions sometimes appear to be characterised by a high content of tin, tungsten, boron, and fluorine, and the fact that tin and tungsten (and many other metals) form volatile fluorides has led many authorities to presume that these solutions were gaseous; such solutions are termed pneumatolytic. The tin mineralisations of Cornwall, Nigeria, Bolivia, and Malaya are thought by some to have been formed in pneumatolytic conditions. Later solutions

are probably liquid and give rise to hydrothermal deposits (*q.v.*) classified as hypothermal, mesothermal, and epithermal, in order of decreasing temp. and pressure of formation. Generally speaking, hypothermal deposits are found near the parent intrusive rock, while epithermal deposits may be far removed from the source, in a position where temps. and pressures were lower. In this way may arise the zonal arrangement of ores found in certain districts, notably Cornwall, where, passing from granite to cooler rock, a tin zone is succeeded by copper, lead, zinc, and iron zones.

Certain ores are often found genetically related to certain rock-types, *e.g.* tin, tungsten, and molybdenum with granites; chromium and platinum with basic rocks; gold with a granodioritic parent; copper, lead, and zinc with granite or granodiorite. Further, ore formation is closely connected with periods of profound disturbance of the earth's crust, *i.e.* orogeny or mountain-building. This periodicity is responsible for metallogenetic epochs, or periods during which ore formation was prolific. A particular type of mineralisation may also be found throughout a well-defined, often extensive region, called a metallogenetic province: *e.g.* Portugal, France, Saxony, and Cornwall constitute one metallogenetic tin province formed during Permian-Carboniferous times.

**METAMORPHISM.** Mineral deposits can undergo metamorphism (*q.v.*). Hydrated iron ores, such as limonites, may be changed into haematite and magnetite, a transformation accompanied by an increase in the grade of the ore. During the emplacement of an igneous rock, adjacent rocks are often metamorphosed along the contact. Contact metamorphism is partly due to the effect of increased temp. and partly to hot emanations moving out from the igneous centre. Should these emanations be metal bearing, they may give rise to contact metamorphic or pyrometasomatic mineral deposits.

**SECONDARY ENRICHMENT.** Probably the most important change that ore deposits, especially copper and argentiferous lead deposits, can undergo is secondary enrichment. The outcrop of a sulphide-bearing lode is frequently leached by downward percolating waters forming a gossan (*q.v.*); the ore metals are oxidised to form soluble oxy-salts and the metal-charged solutions descend below

the zone of oxidation. Here chemical reaction takes place between the solutions and the unaltered sulphides, with the result that a new set of minerals is formed whose members are often very rich in the valuable metal of the lode. This chemical process may be responsible for a very rich and valuable ore-body even where the primary mineralisation was low-grade: *e.g.* the extensive "porphyry" copper deposits of the U.S.A., where the primary ore is often too poor to be worked; and the argentiferous lead-zinc ore-body at Broken Hill, N.S.W., Australia, where a high-grade primary mineralisation has through secondary enrichment become a zone of immense value near the surface. *See* Metasomatism; Mineral Dressing; Pegmatite; Prospecting, etc.

*Bibliography.* Mineral Deposits, W. Lindgren, 4th edn., 1933; Strategic Mineral Supplies, G. A. Roush, 1939; Principles of Economic Geology, W. H. Emmons, 2nd edn., 1940; Economic Mineral Deposits, A. M. Bateman, 1942.

**Ore Dressing.** Of this subject a full description is given under Mineral Dressing.

**Oregon.** Western maritime state of the U.S.A. The surface is extremely diversified. In the mountainous W., the Coast Range separates the rocky coast from the fertile valleys of the Willamette and Umpqua rivers, which are enclosed on the E. by the Cascade Range, containing many extinct volcanoes and snow-capped peaks, the highest of which is Mt. Hood, 11,225 ft. Farther E. lies an undulating prairie, scored by valleys and relieved by numerous mountains, and in the N.E. rise the Blue Mountains. The Columbia river marks most of the N. frontier, and the Snake river a large part of the E. frontier, their valleys providing an extensive tract of fertile land.

The climate of W. Oregon is generally mild and healthy, but farther E. there is a scarcity of rain, and an extremely wide range of temperature. Over a large area in the S. there is no river drainage owing to evaporation, and widespread artificial irrigation is necessary. Wheat, hay, potatoes, hops, and various fruits are produced, and the fisheries and stock-raising are valuable industries. Gold, silver, copper, and other minerals are worked, while the manufactures are chiefly associated with land products and the fisheries. Oregon ranks first among the states in the production of lumber, Oregon pine being the trade name for Douglas

fir (*q.v.*). There is a state university at Eugene, and an agricultural college at Corvallis. The length of the railways exceeds 5,200 m. The Dalles and Celilo canal takes ocean-going vessels to Portland, 108 m. inland, and the Columbia and Snake rivers are navigable for a further 460 m. Bonneville dam, built during 1933-37, first stage in the works to control the Columbia river, lies 49 m. E. of Portland; installations here have a capacity of 518,000 kW. Salem is the capital, Portland the commercial centre. Two senators and four representatives are sent to congress. Women received the vote 1912.

The possession of Oregon territory (much larger than the state) was long disputed between Great Britain and the U.S.A. It was jointly occupied 1818-46, when the frontier was fixed at 49°. The state was formed out of the territory in 1859. Area 96,981 sq. m. Pop. (1950) 1,521,341.

**Orëide** OR OROIDE (Fr. *or*, gold; Gr. *eidos*, form). Brass introduced in France as a substitute for gold in the manufacture of jewelry. Its composition is usually copper 85.5, zinc 14.5 parts, and its colour resembles real gold. It takes a fine polish, is ductile and tenacious, and can be stamped, rolled, or worked.

**O'Reilly, JOHN BOYLE** (1844-90). Irish-American poet and journalist. Born at Dowth Castle, Meath, June 28, 1844, he joined the Fenian society, and in 1863 enlisted in the British army in order to induce the soldiers to revolt. He was tried for high treason in 1866, and sentenced to be shot, but the sentence was commuted to 20 years' penal servitude in Australia. Having escaped to America in 1869, he settled at Boston, where he became editor of *The Pilot*, and published several works in verse and prose. He died at Hull, Mass., Aug. 10, 1890.

**Orel.** Town of the R.S.F.S.R., capital of a region of the same name. At the confluence of the Oka and Orlik, 170 m. N.W. of Voronezh, it is an important rly. junction, and makes textile and agricultural machinery, shoes, clothing, etc. During the Second Great War it was occupied by the Germans Oct. 7, 1941, and converted into a powerful strong-point, recaptured by the Russians, Aug. 5, 1943, only after 24 hours' street fighting. Pop. (est.) 120,000.

Orel region is part of the central black earth district of Russia. Potatoes, hemp, wheat, rubber-producing plants, sugar beet,

apples, etc., are grown; there are metal working and food processing factories in the towns. Area 12,200 sq. m. Pop. (est.) 1,500,000. *Pron.* or-el'.

**Orenburg.** *See* Chkalov.

**Orense.** Inland prov. of N.W. Spain, bounded S. and W. by Portugal. It is watered by the Miño, the Limia, and smaller streams. Almost wholly mountainous, it has a mild climate. In the valleys figs, oranges, almonds, olives, and other fruits are grown. In the uplands timber trees abound, walnut and chestnut predominating. Some iron is mined, and fine cattle are reared. Orense formed part of the old kingdom of Galicia. Area. 2,694 sq. m. Pop. (1950) 467,903.

**Orense** (anc. Aurium). City of Spain, capital of the prov. of Orense. It stands on the Miño river, 45 m. N.E. of Vigo on the Monforte-Tuy rly. The river is here spanned by a bridge, 1,320 ft. long and 135 ft. high, built by Bishop Lorenzo in 1230. The Gothic cathedral, dating from 1220, has been damaged by earthquake. Near by are the warm sulphur springs of Las Burgas, and the baths of Caldas de Orense, known to the Romans. Its bishopric was founded in the 5th century. The place, noted for its hams, makes chocolate and textiles, and has tanneries, iron foundries, and flour- and sawmills. Pop. (1950) 55,574.

**Orestes.** In Greek legend, son of Agamemnon and Clytaemnestra. When his father was murdered, Orestes was saved from a like fate by his sister, Electra, who sent him to Phocis, where he became an intimate friend of the king's son, Pylades. Having slain his father's murderers, he was pursued by the Furies, until his acquittal by the court of the Areopagus, at Athens. According to another legend, he went for purification accompanied by his friend, Pylades, to the country of the Tauri (Crimea) to fetch from there a statue of the goddess Artemis, returning with his sister, Iphigenia, to Argos, where Orestes reigned over his father's kingdom at Mycenae. *See* Agamemnon; Areopagus; Choephoroi; Electra; Eumenides; Iphigenia.

**Orfila, MATHIEU JOSEPH BONAVENTURE** (1787-1853). Franco-Spanish chemist. Born at Mahon in Minorca, April 24, 1787, he studied medicine at Valencia and Barcelona universities, then settled in Paris where in 1823 he became professor of chemistry, and in 1830 dean of the faculty of medicine.



his great work *Toxicologie Generale*, 1813, laid the foundations of the science of toxicology. He died Mar. 12, 1853.

**Orford.** Town of Suffolk, England. It stands at the confluence of the Alde and the Ore, famous for its oysters. It is 18 m. E.N.E. of Ipswich, and formerly a town of importance, having a market and sending two members to parliament from 1295 to 1832. The church of S. Bartholomew, a fine example of Early English architecture, has Norman work in the chancel ruins. Orford Castle, a Norman stronghold notable for its keep, forms a polygon of 13 sides. Pop. est. 1,000.

**Orford, EARL OF.** British title borne in turn by the families of Russell and Walpole. In 1697 the seaman, Edward Russell, was created earl of Orford, but the title became extinct on his death in 1727. In 1742 the statesman, Sir Robert Walpole, was made earl of Orford. The title passed to his son and grandson, and, when the latter died without sons in 1791, to Sir Robert's youngest son, the famous Horace. It became extinct on his death in 1797. In 1806 his cousin Horatio, Baron Walpole, was created earl of Orford, and the title is still held by his descendant. Houghton Hall and the estates in Norfolk passed away from the title when Horace Walpole died. The earl's seat is Wolterton Park, Norwich. See Walpole, Horace; Walpole, Sir R.

**Orford, EDWARD RUSSELL, EARL OF (1653-1727).** Nephew of William, 1st duke of Bedford, he entered the navy and actively supported William of Orange, who made him admiral and treasurer of the navy, 1689. Although intriguing with James Stuart, he engaged the French fleet and gained a signal victory at the battle of La Hogue (*q.v.*), May 19, 1692. Suspicions of his loyalty led to his dismissal, but, reinstated in 1693, he commanded the Mediterranean fleet, 1694-95, and was first lord of the admiralty, 1694-99, 1709-10, and 1714-17. He was made earl of Orford, 1697. Died Nov. 26, 1727.

**Orford Process.** A metallurgical smelting process used in the extraction of nickel from its ores. The Canadian ores consist of mixed nickel and copper sulphides, and this method of separating the two sulphides depends upon the greater solubility of copper sulphide in sodium sulphide. After melting with sodium sulphate and coke, the product is cast and it separates into two layers, the

tops being treated for recovery of copper, while the "bottoms" are used for the production of pure nickel. See Nickel.

**Organ.** Largest and most powerful of musical instruments. It has the advantage of many tone qualities, but the disadvantages of an unsensitive touch, and the fact that all expression is obtained from it by mechanical means. It has anything from one to five keyboards or manuals, a pedal keyboard, and numbers of stops, in large organs amounting to several hundred. A few organs of very exceptional size, to be found in the U.S.A., have as many as seven manuals. The stops are controlled by knobs arranged on either side of the manuals or by stop-keys generally arranged over the manuals, and there are various accessories to assist in the manipulation of the stops.

A speaking-stop consists of a pipe of the same timbre for every note on the keyboard, 61 pipes on an organ of full compass. The pitch of the pedal keyboard is an octave below that of the manuals. The pedal keys are of wood and very large; the compass is from CCC to g (32 notes), sounding an octave lower than the lowest note on the keyboards. There are other stops called couplers, controlling appliances for coupling the manuals to the pedals and to each other, so that keys depressed on one keyboard (or pedal-board) sound the corresponding notes or octaves on that to which they are coupled. The length of the pipe governs the pitch and its quality. The pipe sounding CC is approx. 8 ft. long, and a stop sounding the notes as printed is known as an 8 ft. stop. Those of 16 ft. sound an octave below what is printed; those of 4 ft. an octave above. The 8 ft. stops give the instrument its breadth and dignity; they outnumber those of any other single pitch. 16 ft. stops are usually found on the pedal keyboard; they fulfil much the same functions as the double basses in the orchestra. 32 ft. stops are included in large organs and in many comparatively small contemporary ones, in which, however, they are included by a method that is compact and convenient. The 4 ft. and 2 ft. stops and others of high pitches (mixtures) add brilliance.

**VARIETIES OF PIPES.** Pipes are divided into two principal groups, flues and reeds. The flues (diapason, flutes, etc.), made of wood or metal, sound on the same principle as a tin whistle. The front pipes of

an organ belong to this group. The air in a reed pipe, usually of metal, is put in vibration by wind forced between a semi-cylindrical tube, and a brass tongue covering its open side; this is placed in the foot of the pipe. A flue pipe with its upper end closed by a stopper sounds an octave lower than an open pipe of the same length. Harmonic pipes, reed or flue, are so treated that they sound their first harmonic, that is, an octave higher than an ordinary pipe of the same length.

Each manual has a separate function. The most important, the great organ, contains the loud stops of all pitches. The pipes of the swell organ, so called because they are always enclosed in a wooden box, one side of which consists of Venetian shutters which open and close by means of a pedal, are generally not so loud as those of the great organ. In many contemporary organs the whole of the pipes are enclosed in such a box so that every single pipe is expressive by means of the swell-shutter mechanism. The choir organ consists of soft and delicate stops. If there is a 4th manual it is usually called solo organ and contains stops (as its name implies) of distinctive solo quality such as flute, oboe, clarinet, etc. Where there is a 5th manual, it is generally the echo organ and contains very quiet ethereal tone stops, or the bombard organ containing extremely powerful reed stops comparable with the brass in the orchestra. All contemporary organs are blown by an electric motor driving a rotary fan.

#### History of the Organ

In the 11th century already men were acquainted with the art of manipulating the opening of the lower end of the pipe in order to alter its power and quality. There were various crude mechanical methods of opening a valve and allowing wind to pass into the pipes. It was not until the 16th century that the present system of stop control was initiated. Sliders having holes corresponding with as many pipes as there were in the stop concerned were arranged so that the holes would coincide with the opening of the pipes when the stop was "on." Draw-knobs were placed at the sides of the manuals, and when these were drawn levers moved the sliders until the holes came under the pipes. After the invention of the swell by Jordan in 1712 no important innovation is found until the 19th century. The invention of composition pedals by Bishop in

1909 revolutionised stop control. These are iron pedals placed above the pedal keyboard. When depressed they draw certain groups of stops and take in others, each pedal having a fixed combination of stops.

The size to which organs had grown, and the demand for the performance of rapid and difficult passages, made it necessary to find some improvement upon the heavy and noisy tracker (mechanical) key mechanism. This was first achieved by pneumatic lever action discovered by Barker in 1832. The keys, on being depressed, operated valves admitting compressed air from a wind reservoir to V-shaped motor bellows. One side of these was fixed, the other expanded, and the movable side was attached to the tracker action. Tubular pneumatic action eventually overcame the difficulties of slowness and noise. In this action the key operates a valve admitting compressed air to tubes which transmit the power to other valves moving the pallets. A combination of electric and pneumatic (electro-pneumatic) action was used subsequently for many years until superseded by direct electric action, in which the stop control was an electric switch operating an electro-magnet at the chest containing the wind supply to the pipes. When the magnet was energised the pipe was suddenly flushed with wind by the opening of the pallet. This action was both reliable and rapid.

Thumb pistons placed just below the manuals have the same functions as composition pedals, and are often used instead of them. These pistons, controlling groups of stops, can in many organs have their combination changed at the will of the organist sitting at the console. Most contemporary organs have a crescendo pedal which brings on the stops from softest to loudest as it is gradually depressed; and by the voicing of pipes and their relative scale many beautiful and varied tone colours have been evolved.

Typical of the church organ is its broad diapason tone, the natural kind of tone with which one associates an organ. The whole of the instrument's tonal build-up is based on a "chorus" of diapasons in various pitches, and other tonal qualities in the organ are subservient to this glorious sound.

The concert organ must contain a satisfactory diapason chorus, but it must also possess a variety of tone colours particularly useful for

solo effects such as are found in the orchestra—flute, oboe, clarinet, trumpet, etc.

The theatre organ is a series of extreme solo tone-colours welded together into a pleasant musical whole. One of the most important stops in the theatre organ is the tibia, a large scale flute nearly always used with a tremulant, by means of which the wind supply can be tremulously supplied to the pipes, giving the kind of effect that a violinist obtains from a vibrato on his string. The theatre organ also contains many orchestral-toned stops imitating strings, wood-wind, and brass, and nearly always a vox humana, a reed stop imitative of the human voice. The theatre organ also possesses a number of percussion instruments such as drums, cymbals, xylophone, glockenspiel, and under the hands of an expert can be made to give a realistic and musical representation of light orchestral music.

The basic structure of all three instruments is the same, the variety being obtained by the voicing of the pipes.

From about 1900 a method of organ building on what is called the extension principle was developed by Compton. In organs built in this way the pipes available are made to do maximum duty, and an organ that is both compact and relatively inexpensive can be given great tonal resources. Ingenious and reliable direct electric action contributes to the voicing and regulation of tonal resources of such an instrument. See diagram facing p. 6221.

Leslie Spurling

**Organic Chemistry.** Term applied to the branch of chemistry dealing with the products of animal and vegetable organisms. The term has become to some extent restricted to the study of carbon and hydrogen compounds and their derivatives. See Carbon; Chemistry; Hydrocarbon.

**Organists, ROYAL COLLEGE OF.** London institution. Founded in 1864 to further the interests of the profession of organist, and of church music generally, it conducts examinations in organ playing, the theory of music, and choir

training. Upon the results of the organ playing and theory examinations the diplomas of Associate and Fellow are awarded. For many years the home of the college was in Hart Street, Bloomsbury, but in 1904 it moved to the present building in Kensington Gore. This was erected in 1876 for the National Training School for Music and was used by the Royal College of Music 1882-94. The Royal College of Organists received a royal charter in 1893.

**Organizer.** Biological term. In the developing egg of many forms it has been found that the dorsal part of the rim of the blastopore when it is implanted into another egg, will cause the host egg to produce a supernumerary embryo. The tissue donated organizes the host. This observation was made by Spemann. It has subsequently been found that the organizer works by producing substances which affect the metabolism of the host and evoke from it responses which constitute the formation of this extra embryo. See *Evocator*; Embryology.

**Orgeiev** OR ORGEEV. Town of Moldavia S.S.R. It is situated 25 m. N. of Kishinev, on the Reut. The chief industries have been the making of tobacco, candles, and bricks, tanning, and dyeing. Its limestone quarries are famous. Part of the town is built over the site of a Dacian fortress. Pop. 18,000.



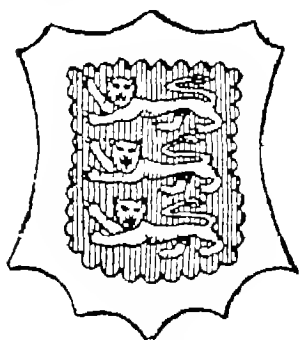
Oriel window. Example in Nuremberg, dating from 1361

**Oriel** (late Lat. *oriolum*, small room, recess). In architecture, term usually applied to a bay window corbelled out from the wall of an upper floor, or over a porch, but formerly extended to a bay window on the ground floor. A conspicuous feature of Tudor architecture, it became common about the middle of the 15th century. See Gothic Architecture.

**Oriel College.** College of Oxford University. Founded in 1326 by Adam de Brome, a servant of Edward II, and dedicated to S. Mary the Virgin, it was not called Oriel until a little later, a building called La Oriole having previously stood on the site. The older



buildings, including the beautiful front quadrangle, face Oriel Street, while newer ones face High Street.



Oriel College arms

The head of the college is the provost. S. Mary Hall has since 1902 been incorporated with Oriel. This college was specially associated with the Oxford Movement. Of later members one of the most distinguished is Cecil Rhodes, who left a large sum of money to the college and provided funds for the new buildings. Other famous members have included Sir W. Raleigh, Bishop Butler, Gilbert White, and Thomas Hughes. See Oxford Movement. Consult Oriel College, D. W. Rannie, 1900.

**Orient** (Lat. *oriens*, rising). Region where the sun rises, i.e. the east. It is used, more or less poetically, as a synonym for the eastern parts of the world, e.g. China, Japan, etc., and their inhabitants are sometimes called Orientals. An Orientalist is one who is acquainted with the learning of the East. In the same way the western parts of the world are sometimes called the Occident.

**Oriental and African Studies**, SCHOOL OF. London educational institution. Founded in 1916, it is a recognized school of the university of London. The buildings are situated on the university site in Bloomsbury. The academic work of the School is organized in eight departments, viz. India and Ceylon; South East Asia and the Islands; the Far East; the Near and Middle East; Africa; Phonetics and Linguistics; History; and Laws. Instruction is given in all the principal languages and in the histories, religions, and cultures of Asia and Africa. The school provides the language training for the colonial administrative service.

**Orientation**. Primarily, the turning towards the East, or Orient. In architecture, the term is applied to the setting of a building with reference to the compass points. The main entrance to Greek temples faced E. so that the level rays of the early sun lit up the image of the

divinity. Early Christian basilicas were similarly orientated, but when a change of ritual involved the turning of priest and congregation to the E. the orientation was reversed, and from the 6th century most churches were built with the altar at the E. end and the main doors at the W.

In surveying, orientation means the direction of an object according to the points of the compass. The term is also used in building when siting structures in relation to the sun so that the maximum sunlight will penetrate to the interior. The angle of orienta-



Oriel College, Oxford. Front quadrangle of the old buildings, showing hall (left) and chapel (right)

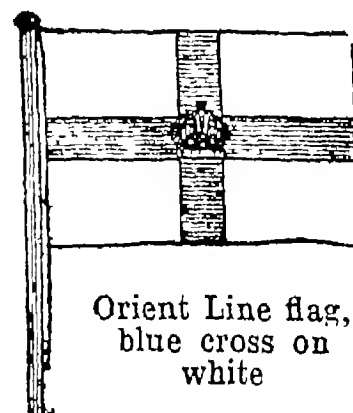
tion is a term in ballistics to describe the angle which the vertical plane, including the axis of the projectile, makes with the vertical plane holding the tangent to the trajectory.

In biology, orientation is the adjustment of an organism or its parts to its environment.

**Oriente**. Largest of the six provinces of Cuba, with an area of 14,211 sq. m. In the S. it is mountainous and heavily wooded. Mount Pico Turquino (8,400 ft.), the highest mountain in the island, is in this province. In the N. there is a flourishing fruit industry served by a group of ports, with steamer connexion with New York. Santiago, the capital, and Guantanamo are situated on great landlocked harbours surrounded by mountains. Santiago is 600 m. from Havana, with which it is connected by the Cuba rly. and also by a good motor road. Pop. 1,142,629.

**Oriente**. Region of Ecuador. Formerly a province, it was divided in 1925 into the two provinces of Napo Pastaza and Santiago Zamora. It includes territory on the Peruvian frontier, the exact demarcation of which has long been in dispute. More than half the region is uninhabited. Area 219,095 sq. m. Pop. est. 295,000

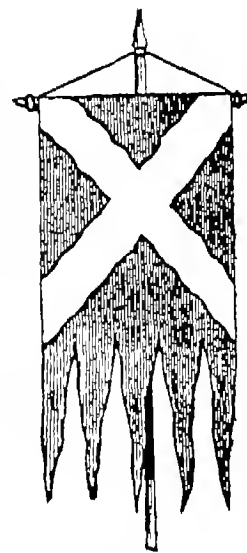
**Orient Line**. British steamship company. Founded in 1877 to provide a service between London



Orient Line flag, blue cross on white

and Australia, it became the Orient Steam Navigation Co. in 1878. It runs from London (Tilbury Dock) to Gibraltar, Naples, Port Said, Aden, Colombo, Fremantle, Adelaide, Melbourne, and Sydney; across the Pacific via Auckland, Suva, Honolulu to Los Angeles, San Francisco, and Vancouver. Its head offices are at 9-11, Billiter Square London, E.C.3. The names of its steamers all begin with O.

**Oriflamme** (Fr., golden-flame). Sacred standard of the French kings. It was kept by ecclesiastics, and was supposed to have been the cloak of a saint, some say the blue mantle of S. Martin; according to others, it was red. It was destroyed in battle. The second oriflamme, kept at the abbey of S. Denis, was red with yellow flames, and had streamers. It was raised by the French at Agincourt, its last appearance. See Flag.



Oriflamme. 5-pointed French royal standard

**Origen** OR ORIGENES (c.185-254). Greek father of the Church. Born at Alexandria, son of Leonidas, a Christian martyr, he was educated by Clement and Pantaenus. He taught in the catechetical school at Alexandria, where he founded a theological school, but was banished and degraded to the status of a layman. Teaching at Caesarea, he was imprisoned during the Decian persecution, 250, and died at Caesarea or Tyre. A voluminous and learned writer, whose orthodoxy was questioned, he wrote, in Hexapla, a polyglot of the O.T., the first textual criticism of the Bible. Origen also wrote commentaries and other exegetical works, a defence of Christianity, Against Celsus, and aimed at adapting Greek philosophy to the needs of Christian theology. He ranks among the early Fathers.

**Original Seceders**. Body of Scottish Presbyterians formed in 1842 from the remnants, or Auld

Lichts, of both burgher and anti-burgher parties of the Secession Synod unabsorbed into the Church of Scotland or United Presbyterians. The Original Seceders opposed the use of instrumental music in public worship, and favoured national establishments of religion based on the Solemn League and Covenant. *See* Auld Lichts; Church of Scotland.

**Original Sin.** Term for the mystical Christian doctrine that man inherits sin by descent from Adam. It was defined by the council of Trent, and is regarded as being implied in Ps. 51, v. 7; Rom. 5, vv. 1-2; and, combined with the doctrine of divine grace, in 1 Cor. 15, vv. 21-22. *See* Atone-ment; Fall, The; Free Will; Grace.

**Originating Summons.** In English legal procedure, a summons returnable before a master or a judge, when no writ has been issued. An inexpensive proceeding, it is used in many cases relating to trusts and other matters where a legal decision is necessary, though the facts are not in dispute. Thus, if executors or trustees are in doubt about the construction of a claim in a will or settlement, they ask the court to interpret it by originating summons.

**Origin of Species, THE.** Book by Charles Darwin published Nov. 24, 1859, with the full title *On the Origin of Species by the Means of Natural Selection*. The theory was first clearly conceived by him in 1839. He was engaged on an extensive presentation of the subject, when Alfred Russel Wallace (*q.v.*) sent him an essay showing that he also had independently reached much the same conclusions. This led Darwin to publish an abstract of his larger work as originally planned. *See* Darwin; Darwinism.

**Orihuela.** Town of Spain, in Alicante prov. Situated on a plain called the Garden of Spain, the town is on the Segura river and is backed by a rocky ridge, the Cerro de Oro, 15 m. by rly. N.E. of Murcia. The bishopric dates from 1265. There are tanneries, corn and oil mills, and textile factories. This was the Orcelis of the Goths, who here made a last stand under Theodoric. In 713 it was captured by the Moors, who called it Origiela, and in 1265 recovered by the Christians. Pop. 42,500.

**Orillia.** Town and holiday resort of Ontario, Canada. It stands on Lake Couchiching, 86 m. N. of Toronto, and is served by C.N.R. and C.P.R. Steamers go from here to places on Lake Simcoe. The scene of Leacock's *Sunshine*

*Sketches of a Little Town*, Orillia is also a manufacturing centre. Pop. 9,798.

**Orinoco.** River of S. America. It rises in the Sierra Parima in a mountain gorge which divides Brazil from Venezuela. Starting towards the N.W., it flows round these mts. in a great curve, thence E. to the Atlantic Ocean. S. of Mt. Duida the Casiquiare canal leads to smaller streams that join the Rio Negro and thus connects the Orinoco with the Amazon. The right-bank tributaries, all from the Sierra Parima, are the Ventuari, Caura, and Caroni; those of the left bank, Guaviare, Meta, and Apure, flow across the llanos from the Colombian Andes.

Between the mouths of the Guaviare and the Meta the main stream makes the falls of Maipures and Atures 36 m. apart, which prevent the passage of boats between the navigable stretches above and below them. About 160 m. from the sea the Orinoco delta begins, upwards of 50 channels distributing its waters into the Gulf of Paria or direct to the Atlantic Ocean. Ocean steamers reach Ciudad Bolivar 200 m. from the ocean, where the river is tidal. Its length is 1,600 m.

**Oriole** (*Oriolidae*). Family of passerine birds, natives of the Old World. About the size of a thrush. They are richly coloured with yellow, olive green, and black; have strong bills, short legs, and long wings, and construct hammock-like nests, which are suspended between two forking branches. The golden oriole (*Oriolus oriolus*) of Asia, S. Europe, and N. Africa is a regular visitor to Great Britain on migration, and would probably nest here but for the fact that it is usually shot on sight. The cock is golden yellow with the exception of the wings and the middle of the tail, which are black. In the hen the upper parts are yellow-olive and the pale under parts are streaked with brown. Mainly insectivorous, the birds consume berries in the autumn. The so-called orioles of the U.S.A. are not related, but belong to the family Icteridae.

**Orion.** In Greek mythology, a famous giant and hunter. Falling in love with Meropē, daughter of

Oenopion, king of Chios, he obtained from her father the promise of her hand, provided he cleared the island of wild animals, which was supposed to be an impossible task. Orion duly performed it; but Oenopion made him drunk and put out his eyes as he lay asleep. Having recovered his sight by following the advice of an oracle, Orion took vengeance upon Oenopion. He was slain by Artemis with her arrows for attempting to violate her; or was killed by a scorpion bite as punishment for boasting about his prowess as a hunter. After his death Orion was placed among the stars.

**Orion.** In astronomy, one of the constellations. Lying on the celestial equator, S.E. of Taurus, it contains the three famous stars, Rigel, Betelgeux, and Bellatrix. The constellation as a whole is one of the brightest in the sky. It contains a large number of variable stars and the great Orion nebula.

**Orissa.** State of India. It includes the former British prov. of Orissa, and 22 former princely states. Area 59,869 sq. m. Pop. (1951) 14,644,293. It contains the S. part of the Chota Nagpur plateau, and includes the lower valley and the delta of the Mahanadi and the greater portion of the Brahmani tributary. All the coast of Orissa is in the division of Cuttack, between Andhra Union

on the S. and W. Bengal on the N. Cuttack was replaced as capital by Bhubaneswar in 1956. Orissa was conquered by the British in 1803. Long attached administratively to Bihar, it was made an autonomous province in 1937; it became a state in 1950. Oriya was made the official language in 1954. Rice growing and milling occupies

80 p.c. of the working pop. Silver filigree work is famous.

**Oristano.** City of Italy, in Cagliari prov., Sardinia. On the Gulf of Oristano, with rly. and steamer connexion with the other chief towns of the island. It has potteries, and trades in wheat, wine, and fish. Pop. (1951) 17,316.

**Oristano, GULF OF.** Arm of the Mediterranean Sea. It is almost in the middle of the W. coast of Sardinia, 10 m. long and 5 m. wide, and receives the Oristano river, which has a course of 80 m. It forms a harbour for Oristano city.



Oriole. Specimen of the green oriole



**Orizaba.** City of Mexico, in the state of Vera Cruz, 70 m. S.W. of Vera Cruz. A favourite resort, it is linked by road, railway, and air with Mexico city. It lies in a fertile valley, more than 4,000 ft. above sea level, and has railway workshops, textile factories, paper mills, and breweries. Pop. (1950) 55,531.

**Orizaba, Pico de.** Highest peak in Mexico. Called by the Aztecs Citlaltepētāl (star mountain), it is situated 25 m. N. of the city of Orizaba, and rises to a height of over 18,000 ft. An extinct volcano, it last erupted with violence in 1566.

**Orjonikidze.** Name given to several towns of the U.S.S.R. in honour of the revolutionary Orjonikidze (*v.i.*). A manganese-mining centre of Dniepropetrovsk region, Ukraine, 15 m. W. by N. of Nikopol, was so named. Jaujikau (*q.v.*), in North Ossetia A.S.S.R., was called Orjonikidze during 1933-44; Yenakiyevo (*q.v.*), in Stalino region, Ukraine, was called Orjonikidze during 1935-43. Stavropol Territory, in the Caucasus, was called Orjonikidze Territory during 1937-43.

**Orjonikidze, GRIGORI KONSTANTINOVICH** (1886-1937). Russian revolutionary and administrator. Born in Georgia, Oct. 15 O.S., 1886, he was early prominent in revolutionary activity, and in 1908 was exiled to Siberia. The following year he reached Paris, later returning to Russia to assist Lenin. Again exiled to Siberia, he was liberated during the Bolshevik revolution of 1917 and joined the Red army as director of operations in the west and south of Caucasia during 1919-21. In 1930 he was commissar of heavy industries in connexion with the first five-year plan. He died at Moscow on Feb. 20, 1937.

**Orkhon Inscriptions.** Ancient stone records S. of Lake Baikal in the Orkhon valley, Mongolian People's Republic (Outer Mongolia). Discovered in 1889, the principal monument is four-sided, and bears tribal records in Chinese and old Turkic, incised in 733 in an alphabet derived from an Aramaic source. A later inscription, dated 805, was made under Uigur direction. These and others prove that the Turkic and Uiguric peoples of that time were predatory mounted nomads, having no settled town life, but with some cultural elements absorbed from the adjacent populations. The inscriptions throw light on Finno-Ugrian origins.

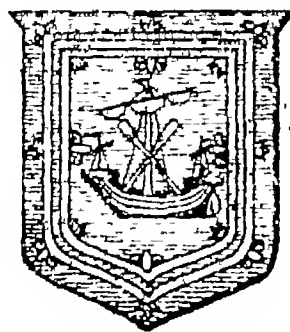
**Orkney Causeway.** Barriers constructed early in the First Great War between the Orkney Islands, which, combined with block-ships, closed the channels into Scapa Flow, making the anchorage safe against submarines. In 1943 these causeways were surfaced and within a year had become first-rate traffic roads linking the islands. They were constructed mainly of concrete blocks, but were not designed as permanent structures.

**Orkney Islands.** Group of islands off the N. coast of Scotland. Pentland Firth, 6 m. wide, divides them from the mainland. The total area is 376 sq. m., and they form a county of Scotland. Islands and islets number altogether about 90, but only 30 are inhabited. Pomona, or Mainland, is the largest. Others are North and South Ronaldsay, Stronsay, Hoy, Flotta, Rousay, Westray, Sanday, Shapinsay, Burray, and Eday. Kirkwall on Pomona is the capital and largest place. Stromness is the only other town. With the Shetland Islands the Orkneys form the county constituency of Orkney and Zetland. The population of the Orkney Islands in 1951 was 21,258.

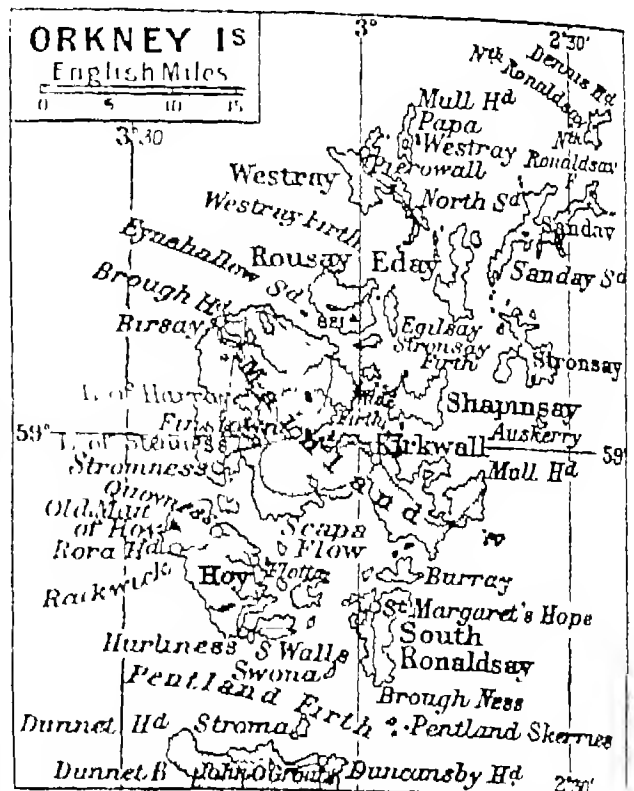
The surface is mainly flat, except on the west coast of the larger islands and in Hoy, although there are hills in Pomona. Lochs Harray and Stenness, both in Pomona, are the largest of a number of lakes. The chief industries are agriculture and fishing. Oats and barley are grown; cattle, sheep, and pigs are reared. Most of the cultivators of the land are crofters. Scapa Flow (*q.v.*) is between Mainland (Pomona) and Hoy.

The Orkneys were known in early times as the Orcades. In the 9th century they were conquered by the Norsemen, and made dependencies of Norway and Denmark. In 1468, when Christian I of Denmark married his daughter to James III of Scotland, he handed over the islands to Scotland as security for a dowry, but this was not paid, and the islands became definitely Scottish. On several are remains left by the Picts.

The use of Scapa Flow by the fleet made the Orkneys of great importance during both Great Wars. In the Second. A.A.



Orkney arms



Orkney Islands. Map of the island group off the north coast of Scotland

defences were installed, and flying boats of Coastal Command were based there. The channels into Scapa Flow were controlled by the previously erected Orkney Causeway (*q.v.*) and by the sinking of block-ships against submarines.

**Orlando.** Ital. form of the name Roland (*q.v.*). It is that of the leading male character in Shakespeare's *As You Like It*. Orlando, youngest of three sons of Sir Rowland de Boys, driven from home by his brother, meets and marries Rosalind.

**Orlando, VITTORIO EMMANUELE** (1860-1952). Italian statesman. Born at Palermo, May 19, 1860, he became professor of constitutional law there in 1883. Entering parliament in 1898, he was minister of education 1903-05, of justice 1907-09 and 1914-16, and then of the interior, 1916. Prime minister in 1917, he acted virtually as dictator in Italy. At the peace conference of 1919, he, Lloyd George, Clemenceau, and Wilson were known as the Big Four. Orlando withdrew from the conference over the question of Fiume, and on his decision to compromise, his ministry fell in 1919. He was ambassador to Brazil in 1920, and on his return at first supported fascism but, turning against it in 1925, resigned from parliament. In 1943 he again took his seat in the chamber, but retired from politics in 1947 to mark his opposition to the peace treaty. He died Dec. 1, 1952.

**Orle** (late Lat. *orlum*, small border). In heraldry, a border round a shield, but not touching the edges. It is one of the sub-ordinaries. Small charges may be borne in orle, i.e. as a border.

**Orléanais.** One of the provinces into which France was divided before the Revolution. It lay

around the city of Orléans, on both banks of the Loire. The Pagus Aurelianensis of the Romans, it was from the earliest times part of the domain of the kings of France.

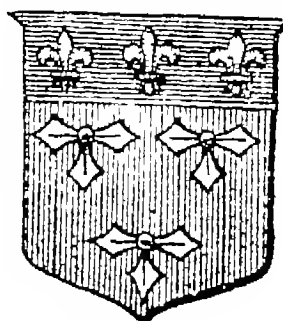
**Orléanists.** Name of the political party which supports the claim of the family of Orléans (*g.v.*) to the throne of France. The supporters of Philippe d'Orléans (1674–1723), of Philippe Égalité, and of Louis Philippe represent its earlier phases. Under the Third Republic it fused with the Legitimist party in 1873, the comte de Chambord being recognized as Henri V. The Orléanists suffered a setback in popular support by the papal encyclical of 1892, which urged French Catholics to rally to their existing political constitution. On the death of Louis Philippe Robert, duke of Orléans (1869–1926), his cousin Jean, duke of Guise (1874–1940),

became heir to the claim. He was succeeded by his son, the count of Paris (b. 1908).

**Orléans.** Island of Quebec, Canada. It is in the St. Lawrence river, 30 m. N.E. of the city of Quebec. It covers 69 sq. m., and is visited by pleasure seekers.

**Orléans.** French city. Capital of the department of Loiret, it stands on the right bank of the Loire at its northernmost point and on the Orléans canal. It is a rly. junction for Paris (60 m. N.), the

Second Great War. The 15th century church of S. Aignan has a 9th century crypt. The hôtel de ville (1442) is now a museum, as are dwellings connected with Agnes Sorel and Diana of Poitiers, but the Joan of Arc museum was destroyed in the



Orléans arms

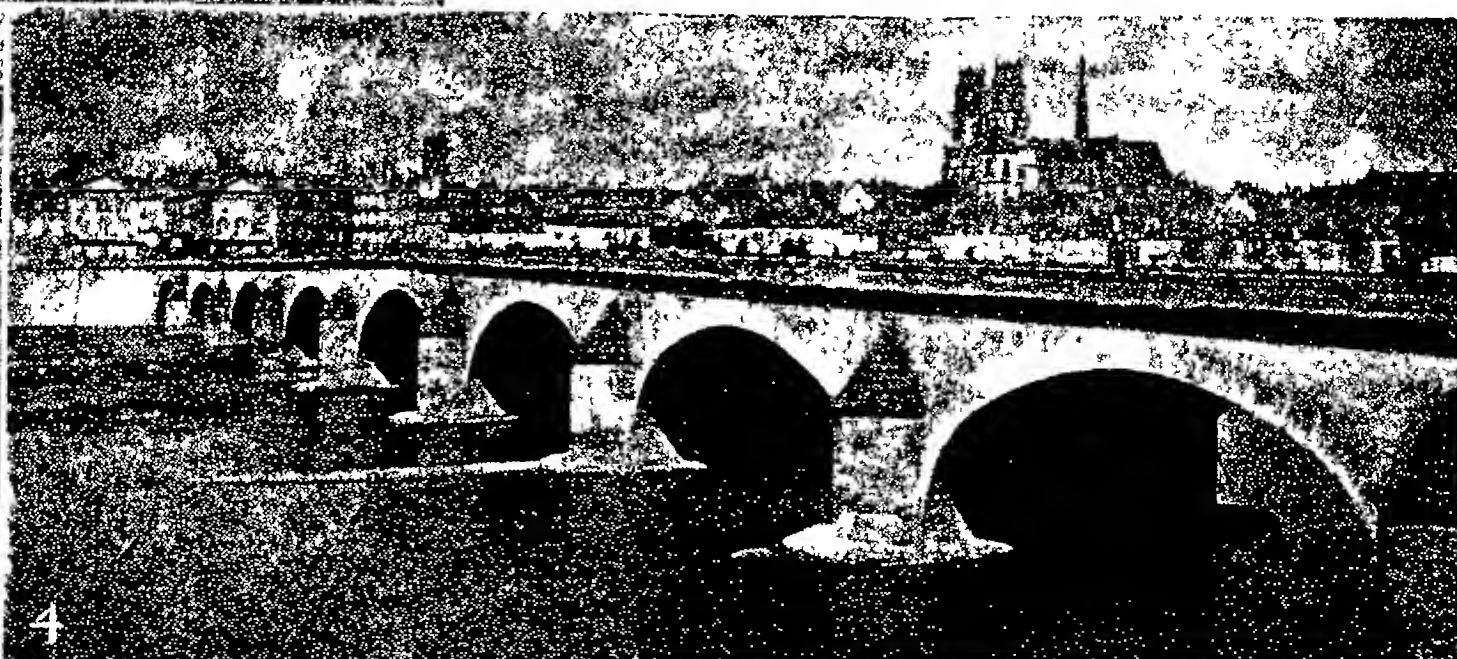
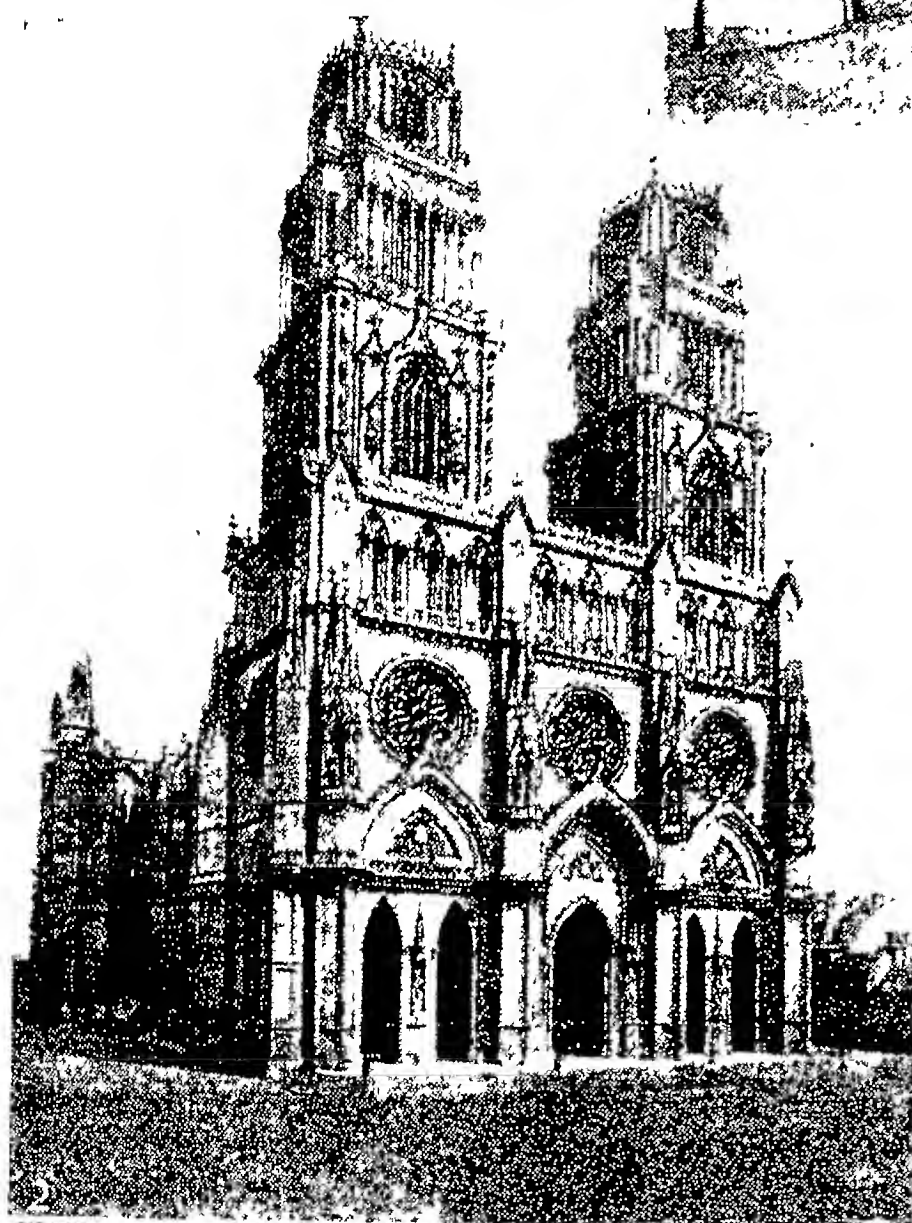
Second Great War. Earlier fortifications gave way to beautiful boulevards. A musical academy and a botanical garden are among the city's amenities.

Orléans has textile, engineering, shoe making, glass, and electrical industries, besides factories for foodstuffs and preserves. Its place in French esteem far exceeds its size

Loire ports Nantes and St. Nazaire, and Bordeaux. One of France's oldest cities, before Caesar's time it was the centre of the Celts of Gaul, deriving its later name from the Roman emperor Aurelian. The outstanding building is the cathedral of the Holy Cross, reconstructed under Henry IV after its destruction by Calvinists in 1562, the only Gothic cathedral built in Europe after the Middle Ages; its N. tower was damaged by shell fire in the

(pop., 1954. 76,439). This is due to its historical rôle: it saw the first national council of the Franks in 511, had a university from 1309 to 1790, was capital of the Bourbon line of Orléans from 1344, and above all was liberated from the English by Joan of Arc in 1429 (*see next entry*). Her memory is preserved in an equestrian statue and the Croix de la Pucelle, a cross on the left bank of the Loire. The edict of Orléans, 1561, first gave liberty of worship to the Huguenots, and here two years later Francis of Guise was assassinated.

In the Franco-Prussian War Orléans fell to the Prussians Oct. 11, 1870. During the Second Great War the Germans took it again in June 17, 1940, and it remained in the occupied zone of France until freed by armoured columns of the U.S. 3rd army, Aug. 17, 1944.



Orléans, France. 1. Hôtel de Ville, built in 1442. 2. West front of the 17th century cathedral of Ste. Croix. 3. House of Agnes Sorel, a favourite of Charles VII. 4. General view from the left bank of the Loire



**Orléans, SIEGE OF.** English failure during the Hundred Years' War. The English were rapidly conquering France, and on Oct. 12, 1428, their force, about 5,000 strong, under the earl of Salisbury, appeared before Orléans. An assault was attempted, but it was a failure, and Salisbury having been killed, a blockade was decided upon. The besiegers, however, were not numerous enough to encircle the city completely, and the siege dragged on until April. By then Joan of Arc appeared, and having entered Orléans, she led the garrison in a series of attacks on the English positions. One after another these were taken, until on May 4, 1429, the besiegers, under Suffolk, were forced to abandon the enterprise.

**Orléans, HOUSE OF.** Branch of the house of Bourbon (*q.v.*). The first duke of Orléans was a younger son of Philip VI, and the second was Louis, son of Charles V. The poet, Charles of Orléans (*v.i.*), succeeded the latter, and his son became king as Louis XII in 1498. The title then lapsed, to be revived in 1626, when Gaston, son of Henry IV, was made duke. The next holder was Philip, son of Louis XIII, whose descendants still hold the title, although it is not officially recognized in France. Philip's son was the regent Orléans, and from him it passed to Louis Philippe, who became king in 1830. The king's son was Ferdinand, duke of Orléans, and the latter's grandson was Louis Philippe, duke of Orléans. Louis' father had claimed, on the death of the count of Chambord in 1883, the headship of the Bourbons, and to this claim the son succeeded in 1894. He died without issue in 1926, when a cousin, Jean, duke of Guise, became head of the house and pretender to the kingship of France. On his death in Morocco, Aug. 25, 1940, he was succeeded by his son Henry, count of Paris. *See* Legitimists. *Consult* House of Orléans, M. Coryn, 1936.

**Orléans, CHARLES, DUKE OF** (1391-1465). French poet. Son of that duke of Orléans who was



Charles,  
Duke of Orléans

murdered by the Burgundians in 1407, he married his cousin, Isabella, widow of Richard II of England, in 1406. In joint command at

1415, he was taken prisoner and not ransomed till 1440, when he returned to France. He ranks as the greatest of the late French medieval poets. His works comprise about 100 ballads and songs, and about 400 rondeaux, marked by delicacy and charm and the nostalgia of an exile. Charles died at Amboise, Jan. 4, 1465.

**Orléans, GASTON, DUKE OF** (1608-60). French prince. Son of Henry IV. Jean Baptiste Gaston was born April 25, 1608. He was made duke of Anjou and then duke of Orléans, and was no sooner of age than he began his career as a rebel against the existing political order; until 1638, when Louis XIII had a son, he was heir to the throne. Richelieu was his special antipathy, but plot after plot only resulted in the discomfiture and exile of the prince. Several times he succeeded in returning, and in 1643, when Louis died, had a position of responsibility, but the outbreak of the Fronde recalled him to more congenial occupation. After changing from side to side, he was exiled from Paris, and died at Blois, Feb. 2, 1660.

**Orléans, HENRI PHILIPPE MARIE, PRINCE OF** (1867-1901). French traveller. Eldest son of Robert, duke of Chartres, and thus a member of the royal family of France, he was born in Surrey, Oct. 16, 1867. He made his mark as a traveller and did much exploring in Asia and Africa. He found the sources of the Irawadi, and discoveries in Tibet gained him the medal of the Paris geographical society. Some public remarks about the conduct of Italian soldiers in Abyssinia led to a duel between him and the count of Turin, a member of the Italian royal family. The prince died in Assam, Aug. 9, 1901.

**Orléans, HENRIETTA ANNE, DUCHESS OF** (1644-70). English princess, third daughter of Charles I and Henrietta Maria. She is entered in this work as Henrietta.

**Orléans, LOUIS PHILIPPE JOSEPH, DUKE OF** (1747-93). French nobleman, better known as Philippe Égalité. Born at St. Cloud, April 13, 1747, he was son of Louis Philippe d'Orléans and cousin of Louis XVI. He served in the navy, succeeded to the title in 1758, and became known for his



Philippe Égalité,  
Duke of Orléans  
After Reynolds

dissipated life and democratic ideas. Bitterly disliked by Louis and Marie Antoinette, he supported the claims of the third estate, 1789, entered the national convention, 1792, and voted for the execution of Louis. Arrested in April, 1793, he was acquitted of conspiracy at Marseilles, but was tried again at Paris, and guillotined Nov. 6.

**Orléans, LOUIS PHILIPPE ROBERT, DUKE OF** (1869-1926). Claimant to the crown of France. Born at Twickenham, Middlesex, Feb. 6, 1869, son of the count of Paris (1838-94), he was educated at the Collège Stanislas, Paris. Exiled by the law of 1886, he entered Sandhurst, 1887, and served with the 60th Rifles in India. In 1890, having gone to Paris to claim the right of performing a Frenchman's military duties, he was sentenced to two years' imprisonment, but was soon released. In 1896 he married the archduchess Maria Dorothea of Austria. An experienced traveller, he published *Une Croisière au Spitzberg*, 1905, and *Chasses et Chasseurs Arctiques*, 1911. On March 28, 1926, he died at Palermo. *See* Orléans, House of.

**Orléans, PHILIP I, DUKE OF** (1640-1701). French soldier. Son of Louis XIII and Anne of Austria, he was born at St. Germain, Sept. 21, 1640, and bore the title of duke of Anjou until 1661. He married in 1661 Henrietta, daughter of Charles I of England, and in 1671 Charlotte Elizabeth of Bavaria. He fought in Flanders, 1667, in Holland, 1672, and was in command at the victory over the prince of Orange near Cassel, 1677. He incurred the jealousy of Louis XIV by his military successes, but was present at the sieges of Mons, 1691, and Namur, 1692. He died at St. Cloud, June 9, 1701.

**Orléans, PHILIP II, DUKE OF** (1674-1723). Regent of France. Son of Philip, duke of Orléans, and so a near kinsman of Louis XIV, he was born Aug. 4, 1674. As a soldier he served in Flanders, Italy, and Spain. He was prominent among those who, after a succession of deaths in the royal family, tried to seize the reins of government in view of the king's approaching end. Louis XIV named him in his will as president of the council of regency for the young Louis XV, but Orléans wanted more than this titular office, and, assured of popular support, boldly seized the supreme power and ruled France from 1715 until his death, Dec. 23, 1723, although Louis XV came of age Feb. 15, 1723.

Orléans introduced domestic reforms, struck hard at the influence of the Jesuits, and in other ways showed a desire to do well for France. But he was not the man to cope with the state of affairs; the finances were in chaos, and the schemes of John Law (*q.v.*) made matters worse. In foreign affairs the regent was hostile to Spain. Orléans was a dissolute man in a dissolute age, and his name is almost a byword for excesses of every kind. Yet he had marked abilities, loved music, studied chemistry and philosophy, and both as an orator and a soldier was more than mediocre.



Philip II,  
Duke of Orléans  
After J. B. Santerre

**Orlikon Gun.** Automatic gun of Swedish invention adopted by the Royal Navy and merchant navy as an anti-aircraft weapon. Mounted on a turntable, it fired 500 rounds of 20-mm. ammunition per min. to an effective range of 5,000 ft.

**Orloff.** Name of a Russian family. Its first prominent member was Grigorei (1734–83). Having



G. I. Orloff,  
1734–83

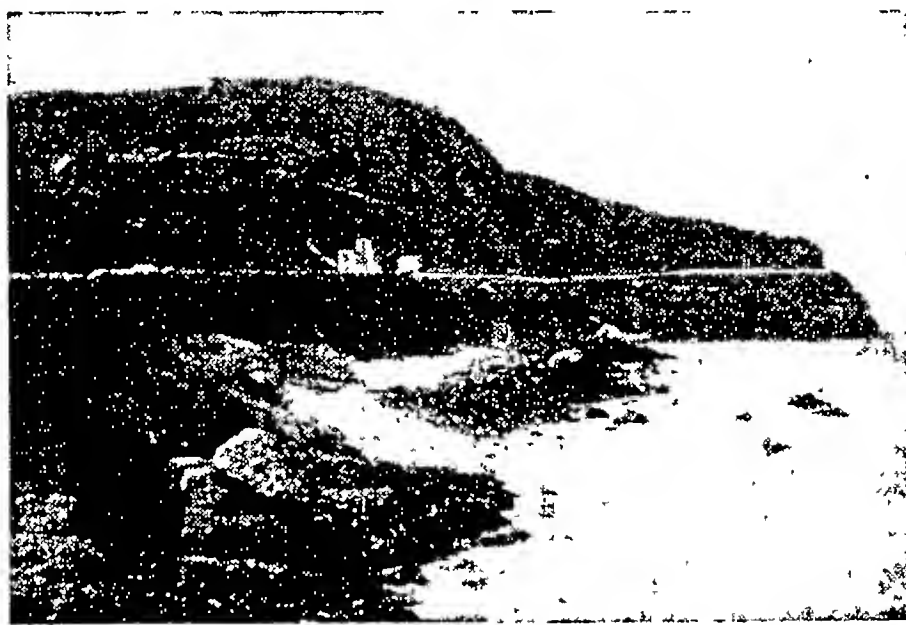
distinguished himself in the Seven Years War, he attracted the favourable notice of the grand duchess Catherine, and was the leading spirit in the conspiracy to place this princess on the throne in 1762. He afterwards lost favour at the court, chiefly owing to the rise of Potemkin, and died mad.

His brother, Alexis (1737–1809), began life as a simple soldier. He was a man of great courage and audacity, and was one of the assassins of Peter III in 1762. He was created an admiral in 1768 and defeated the Turks at Chesme. In 1796 he was exiled by Paul I. His nephew, Grigorei Vladimirovitch (1777–1826), was a scholar, who chiefly devoted himself to history, politics, and literature. With him died the legitimate male branch of the family. Alexis Fedorovitch (1787–1861) distinguished himself in the Napoleonic wars. After concluding the treaty of Adrianople, Sept. 14, 1829, he went as a plenipotentiary to Constantinople, and in 1833 persuaded the sultan to

sign the peace of Unkiar-Skelessi. His son, Nikolai Alexievitch (1827–85), after distinguishing himself at the siege of Silistria in 1854, became ambassador at Brussels, Paris, and Vienna. See Gatshina.

**Ormesby.** Parish in Stokesley rural district, since 1913 part of Middlesbrough. The chief building is the Norman church of S. Cuthbert while the Hall is a capacious mansion. The iron, steel, and chemical works of Tees-side have extended here and brought a pop. est. at 3,000. Ormesby has a rly. station. This is also the name of one of the Norfolk Broads.

**Orme's Head, GREAT AND LITTLE.** Promontories, 4 m. apart, on the coast of N. Wales, in the



Orme's Head, North Wales. View of the Great Orme from the pier at Llandudno

N.E. of Carnarvonshire. Llandudno is on the bay between them. The Little Orme is a limestone height rising sheer from the sea, and its caves can be reached only by boat. The Great Orme is flat topped, a road specially constructed in 1879 encircles it, and a funicular rly. gives access to the summit. A lighthouse with group occulting light is 325 ft. above high water.

**Ormolu** (Fr. *or*, gold; *moulu*, ground). One of the brass alloys. It generally consists of copper 58 parts, zinc 26, and tin 16, and is employed in the preparation of small statues, candiesticks, and other articles, and as the basis of a form of enamel work. In the latter, a design is chiselled in the metal and the cavities are filled with enamel material, which is fused into a solid mass with the metal by heating. Such enamel is styled *émail cloisonné*. The art has long been practised by the Chinese. See Louis Style.

**Ormonde.** English racehorse. Bred at Eaton, Chester, in 1883, by the duke of Westminster, he was unbeaten and won 15 races, including the 2,000 Guineas, Derby, and St. Leger. During the Jubilee

festivities in 1887 Ormonde was brought to Grosvenor House and fêted. After his racing career he went to Argentina, and eventually to California, where he died in 1904. His skeleton was set up in the Natural History Museum, S. Kensington, and his stock proved vigorous and successful.

**Ormonde, EARL AND MARQUESS OF.** Irish titles, held by the family of Butler. The 1st earl was James Butler (c. 1305–37), who married a granddaughter of Edward I. James, 2nd earl (1331–82), and James, 4th earl (d. 1452), each held the post of governor of Ireland. The 5th earl, James (1420–61), came to England, was created earl of Wiltshire in 1449, was high treasurer in 1455 and 1459, but fell with the Lancastrian party. His two brothers, the 6th and 7th earls, were ambassadors in the service of the English crown. On the death of the latter in 1515 the title fell into abeyance. In 1538 the title was resumed by Piers Butler, cousin of the last earl. Thomas (1532–1614),

grandson of Piers, was the 10th earl, and a Protestant, aiding Elizabeth in repressing the rebellion in Munster. His kinsman, James (*v.i.*), the 12th earl, was made marquess in 1642, and duke in 1661. (See Kilkenny.)

The dukedom was lost when the 2nd duke was attainted in 1715, but on his death in 1745 his brother called himself earl of Ormonde. In 1791, after a period during which there was no earl, a relative, John Butler, was declared earl. For his son the marquessate was revived in 1816. It became extinct in 1820, but was revived in 1825. In 1949 it came to James (b. April 25, 1893), 6th marquess, who is also earl of Ossory, Viscount Thurles, Baron Ormonde in the U.K. peerage, and the hereditary chief butler of Ireland.

**Ormonde, JAMES BUTLER, 1ST DUKE OF** (1610–88). Irish royalist. Born Oct. 19, 1610, he was brought up under James I's wardship, succeeded to the earldom in



1st Duke of  
Ormonde  
After Kneller



1632, and became a valuable supporter of Wentworth in Ireland, 1634-40. From 1641 he kept the disaffected Irish in check by his able generalship, and was made lord-lieutenant, 1644. During 1644-46 Ormonde had to face the double opposition of the Catholic rebels and of the parliamentarians; the terms of a peace with the latter forced his withdrawal from Ireland, 1647. He returned, 1648, but after defeat retired to France, 1650. Faithful to Charles II in exile, he became duke of Ormonde in 1661, and was lord-lieutenant 1662-69 and again 1677-84. He died July 21, 1688. *Consult* Life, W. A. H. C. Gardner, 1912.

**Ormonde, JAMES BUTLER, 2ND DUKE OF** (1665-1745). Irish soldier. Grandson of the 1st duke, he



2nd Duke of Ormonde  
After Kneller

was born in Dublin, April 29, 1665, and succeeded to the dukedom in 1688. He supported the accession of William of Orange, under whom he fought at the Boyne, 1690,

Steenkerk, 1692, and Landen, 1693. Lord-lieutenant of Ireland, 1703-07 and 1710-13, he also commanded the English armies in Flanders, 1712. There he obeyed secret orders to remain inactive, was relieved of his generalship, 1714, and impeached as a supporter of James Stuart, 1715, his estates being confiscated by the crown. Thereafter he lived abroad, commanded the Spanish fleet organized against England, 1719, and died Nov. 16, 1745.

**Ormskirk.** Urban dist. and market town of Lancashire, England. It is 12 m. by rly. N.N.E. of Liverpool. The church of SS. Peter and Paul, mainly Perpendicular, has a tower and spire side by side; it contains the burial vault of the Stanley family, whose former seat, Lathom House, is near. The town, which gives its name to a co. constituency, has a 17th-cent. grammar school; chief industries are brewing and brassfounding. Market day, Thurs. Pop. (1951) 20,482.

**Ormulum.** Book of metrical paraphrases of the Gospels, with commentary. It was written by Orm or Ormin, an Augustinian monk of N.E. Mercia, late in the 12th or early in the 13th century, and was first printed by R. M. White in 1852; new ed. R. Holt,

1878. A copy in MS. is in the Bodleian at Oxford.

**Ormuz, STRAIT OF.** Alternative transliteration of the name of a winding sea passage of S.W. Asia. *See* Hormuz.

**Ormuzd, ORMAZD, OR AHURA MAZDA** (wise lord). In Zoroastrian mythology, the supreme deity, creator of heaven and earth, who represents the principle of light and goodness. As the national god of Persia, he was depicted in Achaemenid times as a robed and bearded figure emanating from the winged disk, borrowed from Assyrian and Egyptian iconography, which hovers over the Great King's head. It was by the grace of Ormuzd that the king received his throne, and by Ormuzd's divine power that he conquered his enemies.

The elder of two emanations of the Eternal One, he embodied truth and right; the second, Ahriman, was the lie, spirit of evil and darkness. They are represented as working against each other, every good thing created by Ormuzd at once receiving its evil counterpart from Ahriman. In the Avesta the evil spirits or *daevas* attendant upon Ahriman are in conflict with the good genii, the "immortal holy spirits," who personify ethical ideals such as goodness, perfection and immortality. In the end, the triumph of Ormuzd is assured.

Zoroastrianism (*q.v.*) is sometimes called Mazdacism, the faith of Ormuzd.

**Ornain.** River of France, a tributary of the Marne. It rises near Neuville, in the dept. of Haute-Marne, and flows past Ligny and Bar-le-Duc. Its chief affluent is the Saulx, and its length is 75 m.

**Ornament.** Embellishment added to the appearance of a person or object for the sole purpose of gratifying the eye. In design, the inclusion or addition of ornament is irrespective of the primary purpose of the object designed; or, alternatively, the purpose of the object may be purely ornamental—hence the once-common division of things into "useful" and "ornamental," with many gradations between in which the two qualities are combined. Certain forms of ornament are classical (*e.g.* egg and dart ornament in architectural mouldings, Greek fret patterns), others traditional, others again the expression of the craftsman's exuberance or his pride in his work. Traditional ornament makes wide use of formal pattern, following well-established laws concerning rhythm, repetition, contrast, etc.

Ornament is most acceptable when judiciously used to relieve bare surfaces (as with wallpaper), to provide contrasts, or to enrich the general effect; but no amount of it will serve to make beautiful an object that is intrinsically ugly, nor should it be something extra "applied" to the object, but rather an integral part of the designer's original conception.

The overloading of objects (*e.g.* architecture, furniture, dress) with ornament in the 18th and 19th centuries, combined with the debasement introduced by machine-made ornament, led to a 20th century revulsion against its use. Designers sought to please the eye by the inherent beauty of shape or sheer fitness for purpose of an object; and public taste, shocked at first by the starkness of architecture, furniture, etc., denuded of the traditional frills, gradually accustomed itself to the new standards. It would not be true to say that the 20th century has discarded ornament; but it has perhaps begun to keep it to its proper place.

**IN ANTHROPOLOGY.** Body ornaments are in almost universal use, and have been used since prehistoric times. They are worn for a variety of reasons—from a sense of beauty or fashion, for magico-religious reasons such as protection against evils, for their curative powers, and especially as indicators of social status; hence they are of considerable anthropological significance. Adhesive ornament includes the application of paints and unguents to skin and hair, a practice traceable to Palaeolithic Europe. Neolithic Crete used pottery stamps for printing coloured designs upon the skin. Body-painting, still widespread, is effected by mineral pigments and such vegetable extracts as the Ancient British woad. Andamanese smear themselves with earth and lard, and draw lines therein with the fingers. Fijians bleach the hair with lime; Kavirondo Negroes wear white clay stockings; Tibetan women form designs with seeds embedded in starch paste upon the cheeks.

Ornaments that encircle the body or its parts are of importance since they possibly gave rise to clothing in all its forms. Headbands developed, not only into garlands and diadems, but also into protective headgear. Necklaces, originally thongs and grasses, sometimes plaited, bore perforated berries, shells, and teeth, at first often amuletic. The purpose was afterwards associated with pen-

dants, such as the rats' ears enclosed in Etruscan gold lockets or the bright beetles reproduced as durable scarabs in ancient Egypt. Necklets of human teeth and bones occur in Melanesia. Girdles and belts, which preceded waist-cloths and skirts, acquire decorative forms in African cowry-strings and bead-strings, the tinkling attachments of Bronze-age Europe and Patagonia, and the buckles of civilized dress. See Celt, colour plate. Dress: Earring; Jewelry; Lip-Ornament; Mutilation; Nose-Ornament; Ring.

**Ornaments.** In music, notes which could be dispensed with, without rendering the melody or the harmony incomplete or unintelligible. This definition includes passing notes, appoggiaturas, acciaccaturas, mordents, syncopations, shakes, trills, and turns: often also scales and arpeggios.

**Ornaments.** Term for all articles used in, and subservient to, divine worship. Ornaments of the church include the altar or communion table, paten, chalice, vessels for wine and water, font, pulpit, Bible, Book of Common Prayer, etc.; of ministers, alb, chasuble, cope, surplice, rochet, pastoral staff, mitre, etc. In the Anglican Church, images, crosses, flowers, banners, etc., are allowable as decorations. The question as to what is permitted according to the Ornaments Rubric in the English Book of Common Prayer has involved much controversy and litigation, but generally most of the ornaments used in 1549 are regarded as legal. Much of the controversy centres in the distinction between decorative and symbolical use. See Ecclesiastical Law, Ritual: Ritualism; Vestments.

**Orne.** River of France. It rises near Sées and flows through Normandy into the English Channel. It is navigable for vessels of from 10 to 12 ft. at spring tides. Towns on its banks are Argentan, Écouché, and Caen. There is a canal from Caen to the sea. The length of the Orne is 94 m.

**Orne.** Dept. of France. It is an inland region of Normandy, having an area of 2,371 sq. m. and a pop. of 273,159. It has a number of hills, chiefly in the centre, but few in excess of 1,000 ft. high. The rivers include the Orne, which crosses the dept., Eure, Dives, Touques, Sarthe, and Mayenne. The dept. is noted for its horses. Dairy farming is carried on, cattle are reared, fruit is cultivated, and cereals, including wheat and barley, are grown. Some of the land is

covered with forest. Alençon is the capital; other places are Argentan, Domfront, Montagne, Sées, and Flers. Before the Revolution, Orne was partly in Normandy and partly in Alençon and Perche. There was much fighting here in the summer of 1944. See Europe. Liberation of.

**Ornitholestes** (Gr. *ornis*, bird. *lēstēs*, robber). Extinct dinosaur. The animal was one of the smallest and most active of the dinosaurs, and lived principally upon birds. See Dinosaur.

**Ornithology** (Gr. *ornis*, bird. *logos*, word). Science and study of birds. See Bird; Migration: and under the names of birds.

**Ornithorhynchus** (Gr. *ornithos*, of a bird; *rhynchos*, beak). Generic name for the platypus or duck-bill, one of three animals forming the zoological order Monotremata or Prototheria. These animals are the most primitive living mammals, and in several anatomical details show a marked resemblance to the reptiles. They are oviparous and have a common urino-genital anal opening, the cloaca. There are no mammary teats in the female, but the milk exudes locally through pores in the skin of the abdomen. Comparatively little is known of the habits of these animals, which are found in parts of Australia and Tasmania, but they live in pairs in burrows constructed in the banks of streams. Each burrow has two openings, one above and one below the surface of the water, and in the breeding season two eggs are laid in the nesting chamber. It is uncertain whether the mother hatches them. The animals are about at night, when they feed upon aquatic worms and insects. They swim and dive, but move awkwardly upon land. See Duckbill.

**Orobanchaceae.** A family of leafless herbs, root parasites. They are natives of temperate and tropical countries, particularly of Europe and Asia. The tuberous, fleshy, or scaly rootstock is attached by rootlets to the rootlets of its host, and the stout, scaly stem ends in a spike or spray of flowers. There are generally four or five sepals and a gaping tubular corolla. There are about 12 genera and 150 species. See Broomrape; Toothwort.

**Orogeny** (Gr. *oros*, mountain). Type of earth movement which results in the upheaval of mountain chains. It is confined to long, relatively narrow belts in the earth's crust—orogenic belts—such as the Alpine-Himalayan chains, or the mt. ranges of N. and S. America.

The interruption or termination of a prolonged period of quiet sedimentation by a mountain building episode is termed an orogenic revolution. See Earth Movement.

**Orographic Rain.** Rain produced by the dynamic cooling of moist air which is caused to rise on meeting high ground in its path. With the falling atmospheric pressure accompanying the ascent, the air expands and falls again as precipitation. Because of orographic rain, as distinct from rain of the cyclonic type, the hilly districts of the British Isles in the N. and W. are in general much wetter than the Midlands and S.E.

**Orography** (Gr. *oros*, mountain; *graphein*, to write). Science devoted to the geological and physical study of mountains and the mountain systems of the world. See Mountain.

**Orontes, AXIOS, OR NAHR EL ASI** (the rebellious river). River of the Levant. It rises near Baalbek and the source of the Leontes, and flows N. between the Lebanon and Anti-Lebanon ranges. Emerging to the plains, it expands into the lake of Homs or Kades, and then continues N. between rocky walls until it turns abruptly W. and S.W. and flows across the plains of Antioch to the shore of the E. Mediterranean. S. of Hama the valley is followed by the rly. from Aleppo to Beirut and Damascus. Length, 240 m.

**Oropesa Float.** Device for sweeping sea mines of the contact type. It consists of a hollow float in the shape of an elongated pear which is attached to the sweeping vessel by a wire and streams out at an angle. The wire, serrated to shear through the mine's mooring cable, is kept down to the required depth by a multi-plane kite. See Mine.

**Oropus.** In ancient Greece, a strong seaport on the Euripus, on the borders of Attica and Boeotia. After belonging alternately to Athens and the Boeotian league, with intervals of independence, after 146 B.C. it became a Roman provincial town, being again restored to the Athenians by Antony or Augustus. The town was celebrated for the sanctuary of Amphiarus (*g.v.*), a god of healing.

**Orotava.** Town of Teneriffe, Canary Islands. It is near the N. coast, in a beautiful valley, and is a health resort. Bananas, potatoes, wine, and cochineal are exported.

**Oroya.** Town of Peru, in Junin dept. It lies 137 m. E.N.E. of Callao and is on the highroad



over the Andes from that seaport to Pucallpa. Here is the copper smelting works of the Cerro de Pasco corporation, which employs many foreigners. Pop. 15,000.

**Orpen, SIR WILLIAM** (1878-1931). British painter. Born in Dublin, Nov. 27, 1878, he studied at the Slade school, and began to exhibit at the New English art club in 1899. Elected A.R.A. in 1916, and R.A. in 1919, he was at first chiefly attracted by interior subjects, but developed



Sir William Orpen,  
British painter  
Elliott & Fry

into one of the outstanding portraitists of his day. A fine draughtsman, crisp and direct in his brushwork, and evincing a lively satirical humour in his treatment of a subject, he was led by love of bright colour into occasional over-brilliance. His portraits in the Tate Gallery include those of Dame Madge Kendal, Sir William McCormick, and his own wife. An official war artist on the Western front, 1917, he went on to paint scenes at the Paris peace conference. His many war pictures may be studied at the Imperial War Museum. They evince a strong sympathy for the fighting soldier. Orpen recounted his experiences in *An Onlooker in France, 1917-19*, published 1921. Knighted 1918, he died Sept. 29, 1931. A memoir by P. G. Konody and S. Dark appeared in 1932.

**Orphan** (Gr., destitute). Child or minor deprived by death of father, or father and mother. In the U.K. the lord chancellor is the general guardian of all orphans. The Widows', Orphans', and Old Age Contributory Pensions Act of 1925 introduced pensions of 7s. 6d. a week, under the national health insurance scheme, for children under 14 who had lost both parents. A widow's pension was converted to an orphan's pension on her death if the child was still under the specified age. The allowance, paid to the guardian, was increased to 12s. weekly by the National Insurance Act of 1946. See Children, Law about.

**Orpheus.** In Greek mythology, son of the muse Calliopē. He was famed for his extraordinary skill with the lyre, bestowed upon him by Apollo. So compelling was his music that not only the beasts of the field but even trees and rocks followed the sounds of his lyre.

He accompanied the Argonauts in their expedition to the Black Sea, and lulled to sleep the dragon which guarded the Golden Fleece. On the return of the expedition, he settled in Thrace, and there his wife Eurydice (*q.v.*) died of a serpent bite. Her memory remained with Orpheus and he consistently repelled the advances of the Thracian women, who in revenge for his contemptuous treatment tore him to pieces. The muses set his lyre among the stars. Tradition represents Orpheus as a poet as well as a musician.



Sir William Orpen. *Le Chef de l'Hôtel Chatham*, the painting exhibited at the Royal Academy Exhibition of 1921 and later presented by the artist to the R.A. as his diploma picture

**Orphism.** Term for the mystical doctrines associated with the brotherhood reputed to have been founded by the Thracian Orpheus, and first mentioned by Ibycus 530 B.C. The Orphic rites in which they were engaged were closely connected with the worship of Dionysus. The sect, which continued into Roman times, believed in original sin and transmigration of souls, abstained from certain foods and bloody sacrifices, practised purification rites, and were at a later period associated with the sect of Pythagoreans.

**Orpiment** (Lat. *auri pigmentum*, gold pigment). Native form of arsenic. Chemically it is arsenic trisulphide ( $As_2S_3$ ), or yellow sulphide of arsenic. It occurs as lemon-yellow masses in the oxidised portions of arsenic veins and is often associated with antimony minerals. It is worked in Transylvania, Kurdistan, and elsewhere: it also occurs as a deposit from some hot springs, and as a sublimate from volcanoes at Naples. Realgar, or arsenic disulphide, is called red orpiment and is used in fireworks.

**Orpington.** Urban dist. of Kent, England. It is 14 m. S.E. of London and virtually a suburb, being the terminus of an electric rly. The river Cray rises here, and in the district are large areas under fruit and vegetables. All Saints' church mainly E.E. has some old brasses. At Orpington in 1873 Ruskin set up a printing establishment. The last German rocket fell here on March 27, 1945. Orpington gives its name to a co. constituency. Pop. (1951) 63,344.

**Orpington.** Name given to certain domestic fowls. The claim made for them

that they constitute a distinct breed is disputed. Their name arose from the fact that the Black Orpington was raised by W. Cook of that place, who stated that he raised it from crossings of the Black

Plymouth Rock, the Langshan, and the Minorca. The Buff Orpingtons are said to have been bred from Cochins crossed with ordinary farmyard fowls, and selected until the type was fixed. Orpingtons are excellent general purpose fowls, both good layers and good table birds. There is also a white Orpington. See Fowls colour plate.



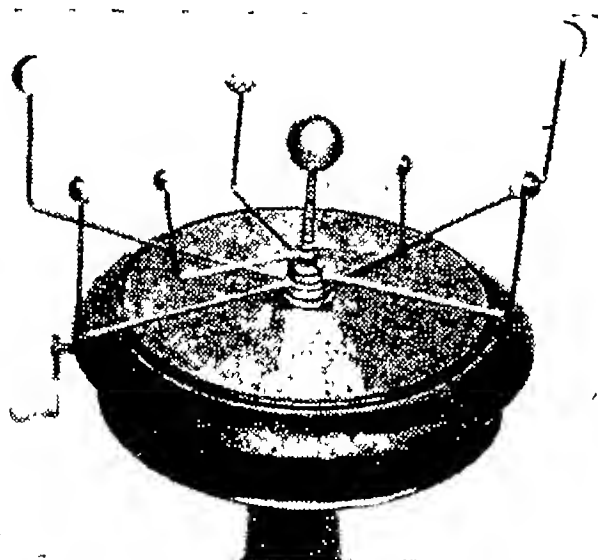
Orpington. Cock of the white variety of the breed

**Orr, HUGH** (1717-1798). Scottish inventor. Born in Lochwinnoch, Renfrewshire, Scotland, Jan. 13, 1717, he began life in the gunsmith trade. He emigrated to America when he was 20 years old, and in 1740 began to manufacture scythes and other tools, at Bridgewater, Massachusetts, and, later, muskets (said to be the first produced in America). He set up a trip-hammer, the first to be constructed in Massachusetts, and during the revolution he cast cannon and cannon-balls. He became interested in the export of flax seed, and invented a machine for cleaning the seed and another for the manufacture of cotton. A senator for Plymouth county for some years, he died at Bridgewater, Dec. 6, 1798.

**Orr, SIR JOHN BOYD** (b. 1880). For this British expert on nutrition, see under Boyd Orr, Baron, the title he took on elevation to the peerage.

**Orrell.** Urban dist. of Lancs, England. It adjoins Wigan on the west, but forms part of the county constituency of Ince. Orrell has two railway stations, and the Leeds and Liverpool canal passes along the N. boundary. A cotton mill provides employment, but the dist. is chiefly agricultural and residential. Pop. (1951) 9,317.

**Orrery.** A device or framework for exhibiting the motions of the planets about the sun. It is so called from the 4th earl of Orrery, for whom an early example was made by George Graham in 1715. Thomas Tompion (?1639-1713), the clockmaker, has been credited



Orrery made by Benjamin Martin, c. 1770  
Science Museum, S. Kensington

with the invention of the orrery. A more elaborate device invented in the 20th century for the same purpose is described under Planetarium.

**Orrery, EARL OF.** Irish title borne by the family of Boyle since 1660. Roger Boyle (1621-79),

1st earl, was a younger son of the 1st earl of Cork. Born April 25, 1621, he was educated at Trinity College, Dublin. As Baron Broughill, he fought for Charles I in 1642, but for the parliamentarians in 1647, and as a general in Ireland under Cromwell in 1650. Though he had been in the Protector's council, he secured Ireland for Charles II and was created earl of Orrery in 1660, and lord president of Munster, 1660-68. He died Oct. 16, 1679. His romance, *Parthenissa*, appeared in 1654; his *Treatise on the Art of War* in 1677; and he wrote poems and tragedies.

John, the 5th earl, succeeded to the earldom of Cork in 1753, and since then the two titles have been united. See Cork, Earl of.

**Orris Root.** Dried rhizome of the Florentine iris (*I. florentina*), which gives off a strong violet-like odour causing it to be extensively employed by perfumiers. "Essence of violets" is prepared from it, and it forms the basis of "violet powder" and other toilet powders. It is chewed to disguise offensive breath, and it possesses emetic and cathartic properties. Some of the orris-root of commerce is obtained from *Iris pallida*. Both species are natives of the Mediterranean region. See Iris.

**Orsay, ALFRED GUILLAUME GABRIEL, COUNT D'** (1801-52). French dandy. Born in Paris, Sept. 4, 1801, he served as lieutenant of Louis XVIII's bodyguard, and in 1822 formed an intimate friendship with the 1st earl and countess of Blessington, with whom he travelled in Italy. In 1827 he married Lady Harriet Gardiner, daughter of the earl's first marriage. After Blessington's death in 1829, d'Orsay lived with the countess at Kensington, and their house became famous as an intellectual and social centre. D'Orsay was of fine appearance, and a brilliant conversationalist. With Lady Blessington he left for Paris, bankrupt, in 1849, and was appointed director of fine arts shortly before he died on Aug. 4, 1852. See Beaconsfield, Earl of; Houghton, 1st Baron.

**Orsborn, ALBERT WILLIAM THOMAS** (b. 1886). General of the Salvation Army. Born Sept. 4,

1886, he came from Toronto, where both his parents were pioneer members of the Salvation Army. He became an officer himself at 19, held administrative posts in New Zealand and in the Salvation Army international training college, and was territorial commander for Scotland and Ireland. Salvationists knew him for "war-songs" and poetry in their periodicals. Awarded the C.B.E. in 1943, he was British commissioner of the S.A. from 1940 and general from 1946 until he resigned in 1954.

**Orsha.** Town of White Russia S.S.R. It stands at the junction of the Dnieper and Orshitsa, 50 m. by rly. N. of Mogilev, and is an important rly. centre.

It trades in grain and timber and has ironworks. The Germans seized it in July, 1941, and built it up as a strong defence point. The 3rd White Russian army recaptured it in a dual attack from the E. and the N.W., June 27, 1944.

**Orsini, FELICE, COUNT** (1819-58). Italian revolutionary, born at Meldola, Romagna. He became an advanced liberal, and in 1844 was sentenced to life imprisonment for his connexion with the revolutionary party. Liberated under the amnesty of Pius IX, 1846, he was a member of the government of Rome during the republic of 1849, and on its fall became an indefatigable agitator. Regarding Napoleon III as the incarnation of the spirit of reaction, Orsini made his way to Paris, and on Jan. 14, 1858, threw a bomb at the emperor and empress as they drove to the Opéra. They escaped injury, but ten people were killed and 150 wounded by the explosion, Orsini among them. He was arrested and on March 13 executed.

**Orsk.** Town of the R.S.F.S.R., in Orenburg region, 155 m. S.E. of Orenburg town, at the junction of the Or with the Ural river. A pipe-line from Guriev on the Caspian feeds its petroleum refineries; it has also locomotive and aluminium works, flour mills, meat packing plants, and vegetable oil presses. In the vicinity are rich iron deposits; also chrome, nickel, and titanium. Orsk was originally a fortress of the so-called Orenburg line set up against Kirghiz inroads. Pop. (est.) 100,000.



Felice Orsini,  
Italian revolutionary  
After Vintner



Count d'Orsay,  
French dandy  
After R. J. Lane, R.A.



**Orsova.** Two towns of Rumania, called Old and New Orsova, formerly in the S.E. corner of Hungary. Pop. 8,528. Here the Carpathians terminate against the Danube, and 5 m. downstream are the Iron Gates: parallel with them the Cserna flows S. to the Danube, and Orsova marks the confluence of the two streams. The rly. from Budapest follows the Cserna and Danube valleys past Orsova station 2½ m. from the town. Close to the station Kossuth buried the Hungarian crown in 1849. Old Orsova stands on the W. bank of the Cserna. New Orsova, on the E. bank, was a Turkish fortress. See Rumania. *Pron.* Orshōva.

**Ortegal.** Cape on the N.W. coast of Spain, one of the most northerly points of the Spanish seaboard. It is known for the naval engagement, also called the battle of Cape Ferrol, that took place off here between the British and the French, Nov. 4, 1805. The action consisted of a successful attack by Strachan, in command of three line-of-battle ships and four frigates, upon four French ships of the line. These vessels had escaped from Trafalgar, and with their capture the French fleet was destroyed. See Trafalgar.

**Ortega y Gasset, JOSÉ** (b. 1883). Spanish philosopher. A humanist writer, he became professor of philosophy and literature at Madrid university. Before the Spanish Civil War he was a deputy and leader of a parliamentary group. He left Spain after Gen. Franco's victory and lived in Buenos Aires. His chief works are *El Tema de Nuestro Tiempo*; *La Rebelión de las Masas*; *Aurora de Nuestro Tiempo*.

**Orthez.** Town of France. It stands on the Gave de Pau in the dept. of Basses-Pyrénées, 25 m. N.W. of Pau. There is a 13th century tower, part of the destroyed castle, an old church with a remarkable choir, and a modern town hall. The industries include the manufacture of cotton, paper, and leather, milling, and an agricultural trade. Orthez was in the 13th century the capital of the viscounts of Béarn. With Béarn it became part of the lands of the counts of Foix, and here Gaston Phoebus held his splendid court, vividly described by Froissart. There was a university here in the 16th century; the building is now a factory. It was a centre of Calvinistic teaching, and Protestants are still numerous in the town. The river is here crossed

by two bridges one 14th cent. *Pop.* (1954) 6,713. *Pron.* ortay.

**Orthez, BATTLE OF.** One of the concluding actions of the Peninsular War, Feb. 27, 1814. After manoeuvring for some days round Orthez, the British under Wellington had forced the Gave de Pau river, when Soult took up a position near the Dax-Pau main road. Wellington immediately made dispositions to cut off his retreat. An attack on the French right early in the morning failed, but a boldly conceived and brilliantly executed assault on the left, effected by wading through marshes reputed to be impenetrable, was completely successful, and the French were driven back in confusion. Hill had cut off their main retreat along the Pau road, but by skilful strategy Soult effected his escape.

**Orthite** OR ALLANITE. In mineralogy, a member of the epidote group of minerals consisting of a complex hydrated silicate of calcium, aluminium, iron, and the cerium metals. It occurs as brown to black crystals or grains in certain granites, syenites, or diorites and their metamorphic equivalents; occasionally as large segregations in pegmatitic deposits.

**Orthoceras** (Gr. *orthos*, straight; *keras*, horn). Genus of fossil nautiloid cephalopods. They are distinguished by their straight horn- or cone-shaped shells, the exterior of which is smooth or striated, and the interior divided into chambers by partitions. The fossil is important, as it serves as one of the index fossils, and was very common in Palaeozoic limestones. It is found in deposits from Silurian to Triassic times. The surviving nautilus is descended from the fossil orthoceras.



Orthoceras. Specimen of *O. undulatum*

**Orthochromatic Photography.** Process by which the relative values of coloured objects as seen by the eye are recorded in monochrome more correctly than by the use of ordinary plates. Ordinary photographic emulsions are sensitive only to blue and violet light; hence greens, yellows, and reds are not

adequately represented, being recorded almost as black. An improvement is effected by combining dyes with the emulsion so that it becomes proportionately more sensitive to green and yellow, such an emulsion being known as orthochromatic (or isochromatic). Its sensitivity can be balanced still further by filters to accord more nearly with that of the human eye, which is extremely sensitive to light of yellow-green colour. Orthochromatic materials are much used for snapshots, landscapes, and some portraiture. Emulsions sensitive to all colours of the visible spectrum are called panchromatic. See Colour Filter; Emulsion; Photography.

**Orthoclase** (Gr. *orthos*, straight; *klasis*, fracture). In geology, a potassium aluminium silicate or potash feldspar. It is a constituent of many crystalline rocks, e.g. granite porphyry, gneiss, etc.; has a lustrous glassy white, light yellow, green or red colour; and crystallises in the monoclinic system. It is widely distributed, but workable deposits are found only in granitic pegmatites, mainly in the U.K., U.S.A., and Manchuria. Many varieties are cut and polished for gemstones, e.g. moonstones and sunstones; and it is useful in the ceramic trades.

**Orthodox Eastern Church.** Alternative name for the Holy Orthodox Catholic Oriental Church, also known as the Greek Church (*q.v.*).

**Orthodoxy** (Gr. *orthos*, right; *doxa*, opinion). Term commonly used for soundness of religious belief, but applicable in other spheres of thought. Its use assumes the existence of some standard by which opinion can be tested; but this standard differs considerably in the various sections of the Christian community. The Christian Church as a whole is agreed upon the fundamental doctrines of the Gospel; and these form the real test of orthodoxy.

Shades of belief or thought that are not four-square with orthodoxy are called heterodox; while any teaching which directly contradicts the orthodox faith, or is plainly inconsistent with it, is called heresy. The Greek Church, which claims to have been pre-eminent in conserving the primitive faith, styles itself the Holy Orthodox Church. See Christianity.

**Orthogenesis.** This zoological term, proposed by Eimer in 1895, has been variously used by later workers. To some it has implied no more than evolution by

definite and successive variations in a given direction, as contrasted with indefinite variation; but many have used the term with some implication of causation, the direction of evolution being supposed to be dependent upon some internal factor, or at least to be independent of environment. Orthogenesis has received most sympathetic attention from palaeontologists, and, since their material is often too incomplete to afford a basis for final conclusions, the term can be used to indicate the nature of the phenomena observed, than as an explanation of the mechanism involved. An example is found in the oyster-like *Gryphaea* in whose later stages there are changes thought to be out of harmony with environment and which may lead to extinction. See Evolution.

**Orthogonal Projection.** A projection made by lines drawn at right angles to the plane on which the projection is made. A plan is an orthogonal projection on a horizontal plane; it is the shape that would be traced out by lines drawn from the boundaries of the object at right angles to the horizontal plane. In an orthogonal projection the length of a straight line when projected varies according to the angle at which it is inclined to the plane. The orthogonal projection of a square diminishes in width as the angle increases, until finally, when the square is at right angles to the plane of projection, the latter becomes a straight line. The orthogonal projection of a circle inclined to the plane of projection is an ellipse, the minor axis of which diminishes as the angle of inclination of the circle increases.

**Orthography** (Gr. *orthos*, correct; *graphein*, to write). Term generally used to signify correct spelling. It is also more precisely used to mean the exact representation of the sounds of a language by written signs. The ideal of "Write as you speak" has never been realized, for various reasons. The numerous shades of sound would require too many corresponding signs; pronunciation constantly changes, whereas spelling is more conservative; certain words are wrongly spelt in accordance with a supposed derivation (thus, *island* has nothing to do with *isle*); imported foreign words are sometimes altered, sometimes not (compare *fancy* and *phantom*). Italian and Spanish come nearest the ideal; English and French are most remote from it.

**Orthohydrogen.** Hydrogen of which the rotational quantum number of the atoms is odd. It is thus in contrast to parahydrogen, for which it is even. At ordinary and higher temperatures the ortho-type is three times as numerous as the para-type, but this tendency is reversed as lower and lower temperatures are reached.

**Orthopaedics** (Gr. *orthos*, straight; *pais*, child). Strictly, the treatment and correction of deformities in children, but the term has acquired a more general application. Orthopaedic hospitals and surgeons undertake the treatment of deformities and injuries of many kinds.

**Orthoptera** (Gr. *orthos*, straight; *pteron*, wing). An order of insects undergoing incomplete metamorphosis, the fore wings of which are linear, rather narrow, and leathery. They protect the large hind wings folded beneath them. More than 20,000 species are known and about 32 inhabit Great Britain. They include cockroaches, crickets, grasshoppers, locusts, mantises, and their allies which are referred to under separate headings. Many species, especially cockroaches, occur as fossils in the oldest rocks.

**Orthoptics.** (Gr. *orthos*, straight; *optikos*, of sight). System of exercises devised for the correction of certain pathological conditions of sight, or of malposition of the eyeball, resulting from imbalance of the eye muscles which regulate position and correlation.

**Ortigueira.** Watering-place of N.W. Spain, in Corunna prov., 23 m. N.E. of Ferrol. It stands on the E. shore of the Ria de Santa Marta, an almost landlocked inlet between capes Ortegal and de Vares. The harbour is shallow, and is used mostly for the fisheries and coasting trade. Pop. 21,600.

**Ortles** (Ger. Ortler). Alpine range in N. Italy, in Bolzano prov. Highest point in the E. Alps, rising to 12,800 ft., it lies S. of the valley of the upper Adige, S.E. of the Stelvio Pass, with Mte. Cevedale to the S.E. The ascent

was first made in 1804, the route from Sulden was discovered, 1865.

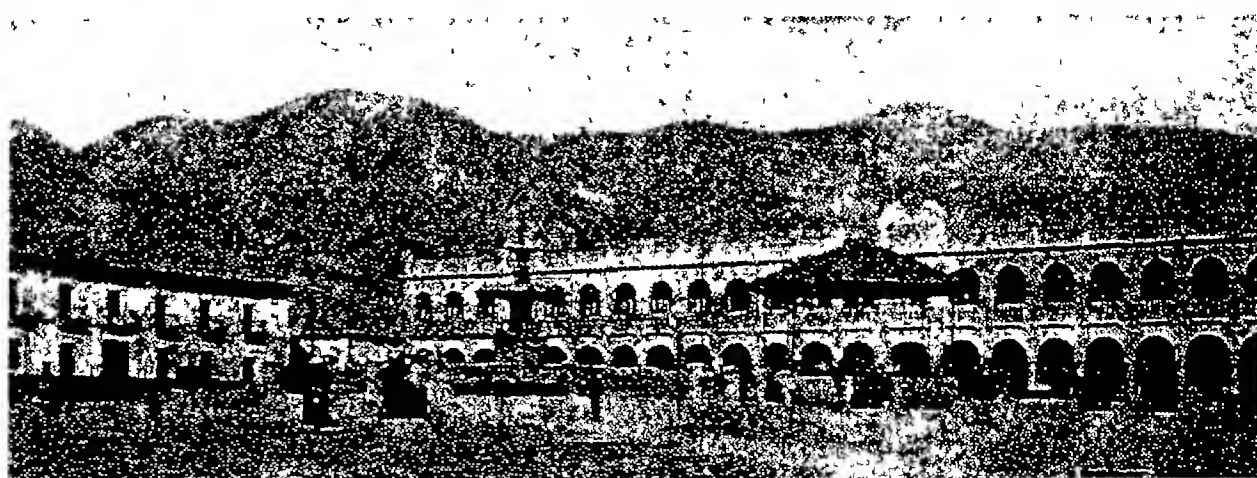
**Ortolan** (*Emberiza hortulana*). Bird of the bunting family. A summer migrant to Europe, spending the winter in Africa, its plumage is reddish brown, streaked with black on the upper parts, with a yellow throat and greenish breast and head. It nests on the ground, and feeds on insects and various seeds. It occurs very occasionally in S. England during the autumn months. The ortolan is greatly valued as a table delicacy, and large numbers are netted in S. Europe and fattened upon grain.

**Ortona.** Town of Italy, in Chieti prov. It is situated on the Adriatic Sea on a headland with a quay on the shore below, and is on the coast rly. 12 m. S.E. of Pescara. The cathedral and a ruined castle were noteworthy buildings. There is considerable trade in wine. Destroyed by the Turks in 1566, Ortona has suffered from earthquakes and has lost much of its earlier importance as a port. Ortona was entered by Canadian troops of the Allied 8th army Dec. 20, 1943; but the Germans were not driven out until Dec. 28, the town being left in ruins, which were full of mines and booby-traps. Civilian casualties were heavy. Pop. (1951) 21,730.

**Oruro.** Dept. and town of Bolivia. The dept. lies on the W. of the state between Chile and the main range of the Andes. It contains Lake Poopo and part of the Desaguadero which connects that lake with Lake Titicaca. The whole dept. is at an alt. exceeding 12,000 ft. and is arid and wind-swept. Tin is the chief mineral, the silver mines being nearly exhausted. Llamas and alpacas are kept, their wool being the chief product. The



Ortolan. Bird of the bunting family



Oruro, Bolivia. Government palace in the Plaza 10 de Febrero



town is a mining centre with an important school of mines; it is the chief rly. centre in the country, being connected with La Paz, Antofagasta, and Cochabamba. Its local industries include the manufacture of boots and alcohol. Area, 20,000 sq. m. Pop., dept., est. 199,800; town, est. 50,000.

**Orvieto.** A city of Italy, in Terni. It is built on a perpendicular, isolated rock near the Tiber, 60 m. N.N.W. of Rome. It trades in locally-produced wine. The superb cathedral, an excellent example of Italian Gothic, was begun in 1295, and is rich in sculptures, pictures, and mosaics. The museum, founded 1296, houses medieval works of art, and Etruscan and prehistoric antiquities. The Well of S. Patrick, adjacent to the citadel, has two spiral planes round the shaft which the water-carrying asses ascend and descend. The tombs in the Etruscan Necropolis date from the 5th century B.C. The town occupies the site of Volsinii, one of the twelve capitals of the Etruscan League, and was destroyed by the Romans in 280 B.C. In the Second Great War the Allies passed through it without fighting June 14, 1944. Pop. (1951) 28,848.

**Orwell** OR GIPPING. River of Suffolk, England. Rising to the W. of Stowmarket, it flows S.E. to the North Sea. From its source to Ipswich it is known as the Gipping. The Orwell proper is an estuary, and extends for 11 m. from Ipswich to Harwich, where it merges with the Stour estuary.

**Orwell, GEORGE.** Nom-de-plume of the British writer Eric Arthur Blair (1903-1950). Born in India, he was a King's Scholar at Eton, served with the Indian imperial police in Burma during 1922-27, but returned to England and eventually settled down as a schoolmaster in the early 1930s. In 1936 he joined the Republican forces in the Spanish Civil War. He was for a time literary editor of Tribune, but was more noteworthy as an independent Socialist who turned his satirical wit impartially on the right and the left. *Burmese Days* (1934) described his early experiences; *The Road to Wigan Pier* (1937) dealt with unemployment; *Animal Farm* (1945) brilliantly satirised the dictatorial aspects of Soviet Communism; *Critical Essays* (1946) subjected various writers and publications to a keen and intelligent scrutiny; *Nineteen Eighty-Four* (1949) was a satirical prophetic novel. He died Jan. 20, 1950.

**Oryx** (Gr., pickaxe). Genus of large antelopes. It includes about four species, which occur in Africa, Arabia, and Syria. They have long



Osage Orange. Spray of foliage, with fruit, of this North American tree

and bushy tails and are distinguished by their long, ringed horns, which are nearly straight. See Gemsbok.

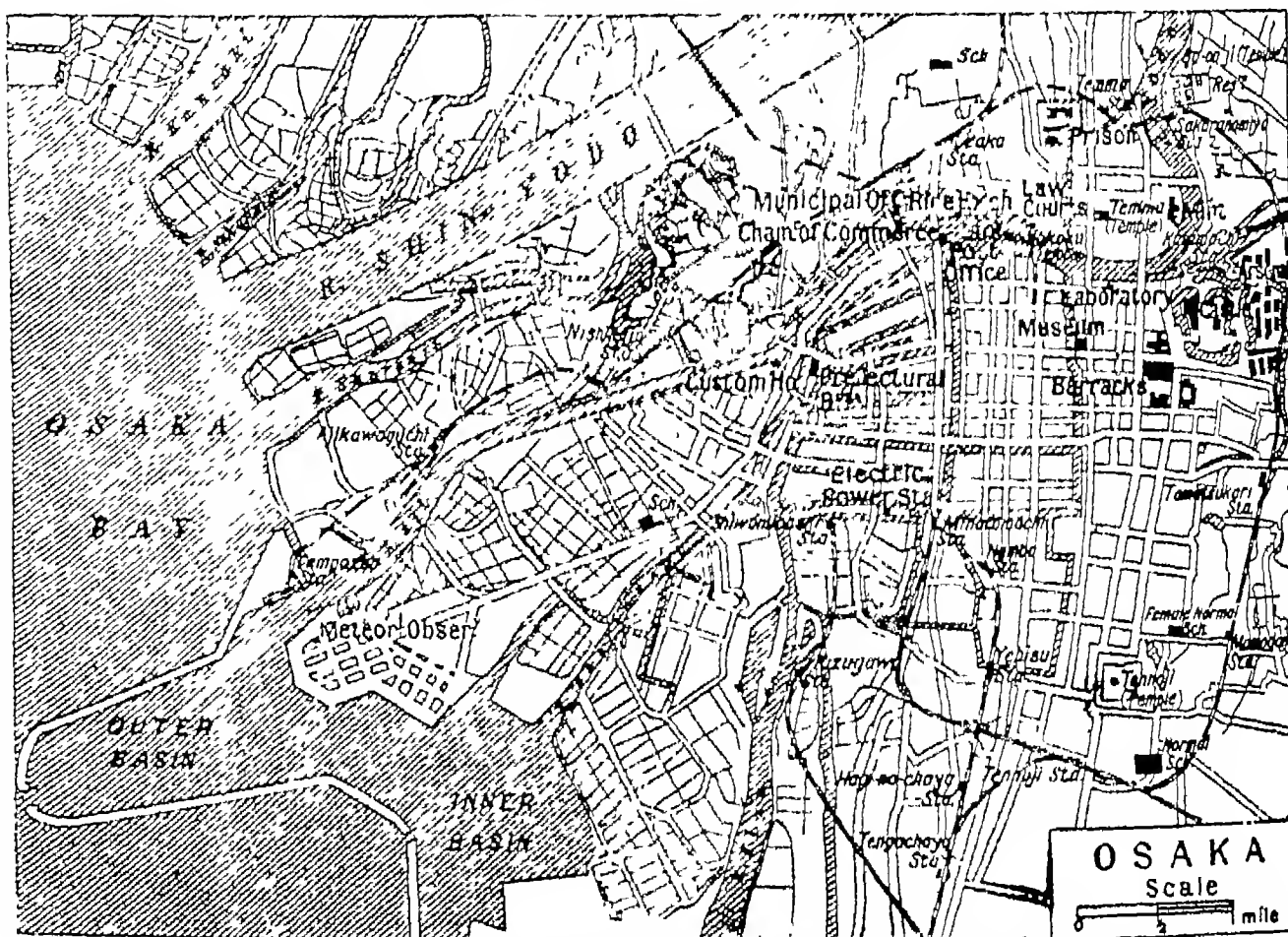
**O.S.** Abbreviation for old style, i.e. of reckoning dates. With the Julian year of 365½ days the date of the year did not actually correspond with the annual progress of the earth round the sun. In 1582, therefore, Pope Gregory XIII introduced a new calendar, the main feature of which was the addition of ten days to the existing date, i.e. Oct. 5 became Oct. 15. This was called the new style, and was soon adopted by the Roman Catholic countries, but less promptly by the Protestant ones. Great Britain did not make the change until 1752, when the difference between the two styles amounted to eleven days. It was ordered that Sept. 3 of that year should be reckoned as Sept. 14.

Discrepancies in dates of birth, deaths, etc., are sometimes due to a confusion between the two styles. See Calendar; New Year's Day.

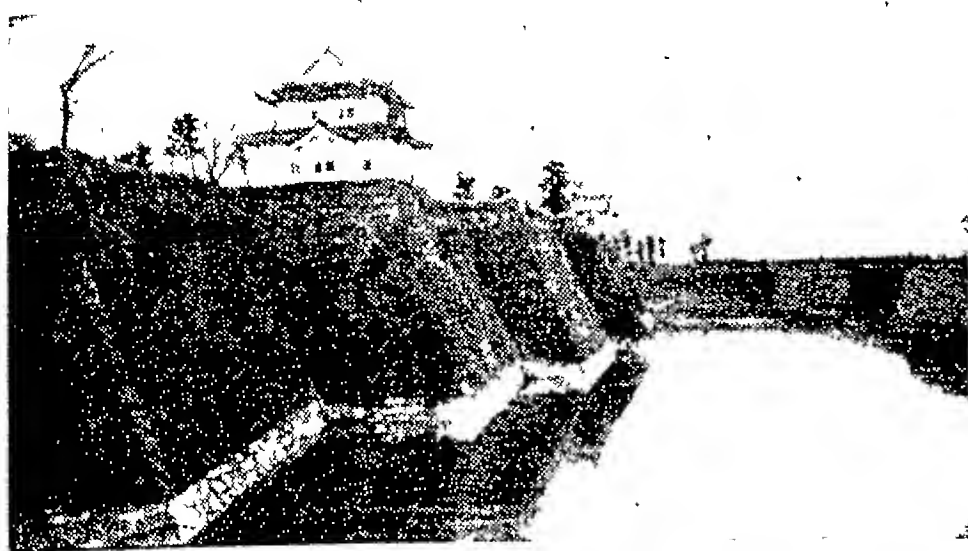
**Osage Orange** (*Machura aurantiaca*) OR Bow-wood. Small tree of the natural order Urticaceae, native of N. America. The stems are spiny, and the leaves oval to oblong-lance-shaped, and shiny. The flowers are inconspicuous and yellowish green. The individual fruits are small nutlets buried in the enlarged fleshy calyx; but a great number of them grow together, forming a multiple fruit, 3 ins. to 4 ins. in diameter, globular and yellowish green. The elastic bright orange wood was used by the Indians for making bows. It is much planted for hedges.

**Osaka.** City of Japan, in Honshu. It covers 8 sq. m. on the alluvial plain at the mouth of the Yodo and at the head of Osaka Bay. The temperature ranges from 27° F. to 100° F. A commercial and manufacturing city, its chief buildings of interest are the temples of Hokoku and Temma and the Japanese mint. Osaka Castle, 2½ m. distant, dates from 1584. The walls were built of granite stones, some 40 ft. long and 10 ft. high, but the superstructure was almost entirely destroyed by fire in 1868.

More than 7,000 factories (many of them small) produce 60 different classes of articles, of which the chief are cotton textiles, iron and metal goods, refined metals, leather goods, ships, glass-ware, confectionery, and patent medicines. There are many distilleries and breweries. Osaka is a great exporting centre for textiles, refined



Osaka. Plan showing the principal buildings and the harbour works of this Japanese seaport



Osaka, Japan. Ramparts of the castle built by Toyotomi Hideyoshi in 1584

sugar, and straw goods, especially in the trade with China and Korea. There are four exchanges for rice and cereals, stocks, cotton, cloth, and oils; the rice and cereal exchange regulates prices.

The city owes its prosperity to Toyotomi Hideyoshi, who built the castle and made his capital here. After the Toyotomi family lost power, Osaka retained its commercial importance, although Tokyo (Yedo) became the political capital. Kawamura Zuiken, in three years, 1684-87, constructed canals and embankments which secured the buildings against the floods of the Yodo. It was the object of heavy attacks from the air during the Second Great War, and its population, which was more than 3½ million in 1940, was estimated as 2,541,600 in 1955.

**Osborne, DOROTHY (1627-95).** English letter writer. She was the daughter of Sir Peter Osborne,



*Dorothy Osborne*  
After Sir Peter Leu

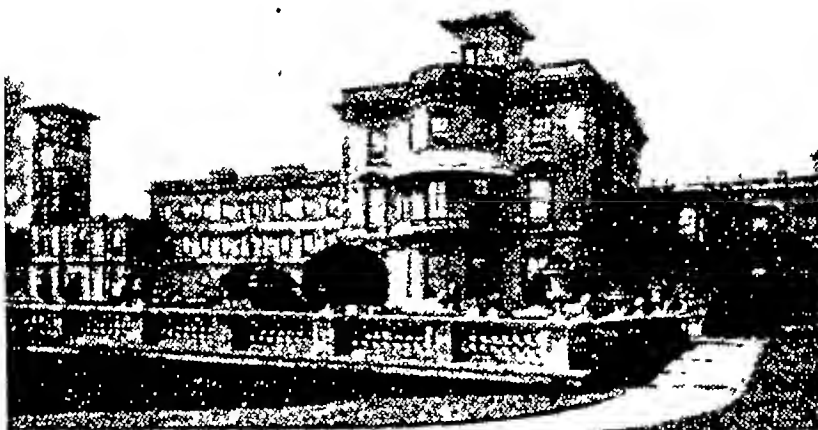
a royalist who held Guernsey for the king, and met Sir William Temple (*q.v.*) in 1648, becoming his wife in 1655. During their long courtship they maintained a correspondence, her share in which has been preserved and constitutes one of the outstanding contributions to English epistolary literature. She died at Moor Park, in Surrey, and was buried in Westminster Abbey in 1695. See *The Letters of Dorothy Osborne*, ed. E. A. Parry, 1888; rev. ed. 1903.

**Osborne Case.** Legal decision of the house of lords in 1909 which declared it to be illegal for British trade unions to make levies on their members for political purposes. Osborne had objected to a levy made on him by his union, the

Amalgamated Society of Railway Servants, for the purpose of making a payment to a Labour M.P. This decision led indirectly to the introduction of payment of members of the house of commons in 1911. The law was modified by the Trade Union Act, 1913, which permitted a political levy but exempted any member of the union who gave notice that he had objections to contributing. See *Political Levy*.

**Osborne College.** Former establishment for training cadets for the British navy. Opened Aug. 4, 1903, it was situated in the grounds of Osborne House, Isle of Wight. After passing the entrance examination, cadets under 13½ years of age went to Osborne for 2 years, passing thence to the Royal Naval College, Dartmouth. The college was closed in 1921, and the staff transferred to Dartmouth. See *Naval Cadet*.

**Osborne House.** Mansion in the Isle of Wight built for Queen Victoria. It is 1½ m. from E. Cowes,



Osborne House, Isle of Wight. Main front of the residence of Queen Victoria

and, commanding a fine view of the Solent, is surrounded by an estate of about 3,000 acres. In 1845 the queen bought about 2,000 acres from Lady Isabella Blachford and the house, in the Palladian style, was built by Cubitt. It was a favourite residence of the queen, who died here in 1901. There are other residences, Barton Manor and Osborne Cottage, on the estate. In 1902 Edward VII presented the house and estate to the nation. Part of it was devoted, at his wish, to a convalescent home for officers, but the royal apartments remained untouched, and are shown to visitors. The Medina flows through the estate, for which there is a rly. station at the neighbouring village of Whippingham.

**Osbourne, LLOYD (1868-1947).** American novelist. He was born at San Francisco, April 7 1868, and educated at Edinburgh university. After divorce from his father, his mother Fanny (*née* van der Grift) married R. L. Stevenson, 1880, and Osbourne, who lived with them



Lloyd Osbourne, American author

in Samoa, where he was U.S. vice-consul, made a reputation by collaboration with his stepfather. Together they wrote *The Wrong Box*, 1889; *The Wrecker*, 1892; *The Ebb Tide*, 1894. Osbourne's own novels include *Love the Fiddler*, 1903; *The Kingdoms of the World*, 1911; *Wild Justice*, 1922; *The Grierson Mystery*, 1928; *Peril*, 1929. He collaborated with Austin Strong in plays, *Little Father of the Wilderness*, and *The Exile*. He died May 23, 1947. Stevenson's *Treasure Island* was dedicated to Osbourne.

**Oscans, Osci, or Opici.** Ancient Italian race, speaking a language akin to Latin, and inhabiting a considerable portion of central and S. Italy.

**Oscar.** Popular term for U.S. film award, instituted 1931, by the American Academy of Motion Picture Arts and Sciences. It takes the form of a statuette conferred annually in recognition of outstanding achievements in films. "Oscars" are given annually to the most successful actor, actress, director, camera man, and scenario writer of the year. The

origin of the term is variously given, but remains obscure. See *Film*.

**Oscar I (1799-1859).** King of Norway and Sweden, 1844-59. He was born in Paris, July 4, 1799, the son of Marshal Bernadotte, and was created duke of Södermanland on his father's election as crown prince of Sweden, 1810. He was educated at Uppsala, and carefully trained as heir presumptive. In 1823 he married Josephine Beauharnais, granddaughter of the Empress Josephine.



Oscar I, King of Norway and Sweden



He proved a liberal and strongly anti-German monarch, and granted freedom of the press. He died July 8, 1859.

**Oscar II** (1829-1907). King of Norway and Sweden. He was born in Stockholm, Jan. 21, 1829, the third son of Oscar I. He entered the Swedish navy as a boy, completed his education at Uppsala, and in 1857 married Princess Sophia of Nassau. He opposed repeated attempts to separate Norway from Sweden made by the Radicals of Norway from 1880, and more than once before the separation of 1905 averted civil war. He used the pen-name of Oscar Fredrik to write in prose and verse, notably a Military History of Sweden. His biography of Charles XII was translated into English, 1879, and his collected writings were published in 7 vols., 1885-1902. He died Dec. 8, 1907.



Oscar II, King of Norway and Sweden

**Oschersleben.** Town of Saxony-Anhalt, E. Germany, in the fertile Magdeburg plains, 20 m. W. of Magdeburg, on the Bode. It is an ancient town, being the seat of the archbishops of Magdeburg, but many of its old buildings were destroyed by frequent fires. In the 19th and early 20th centuries it was an industrial centre with engineering, textile, and food factories. After the Second Great War it was in the Russian occupation zone. Pop. (1950) 22,400.

**Oscillation.** Periodic movements of a body or quantity about some average position or value. The conception is of fundamental importance in the whole domain of physics, in engineering, astronomy, biology, and even in economics. Some unification of these diverse types of periodic phenomena is made possible by general mathematical treatment, and various relations and analogies can be found to interlock the examples in different sciences.

The simplest type of periodic motion is simple harmonic (*q.v.*), in which the time period of repetition of a cyclic motion is constant and independent of the amplitude. In the ideal case such a motion is maintained without loss of energy, but in practice some form of dissipation is present; in an electrical circuit it will be the energy lost by heat in the electrical resistance, while in a

mechanical system friction will be the cause. Under these conditions the motion is said to be damped, and a certain amount of stimulus is required to maintain the oscillation; in an electrical circuit this source of energy will come from an applied E.M.F.

If this energy supply is contained within the vibrating system, the oscillations are said to be self-maintained; if the supply is external, they are forced. A particular phenomenon, known as resonance, takes place if the frequency of the applied force coincides with the natural frequency of the system. The amplitude of the motion in these circumstances may build up to large values; this is why marching troops fall out of step when crossing suspension bridges.

A particular type of vibration often met in nature is the relaxation oscillation, and its characteristic feature is a building up of the amplitude to some optimum value followed by an almost instantaneous decay, this sequence of events being repeated within a definite periodic time. In sharp contrast with simple harmonic oscillations, the amplitude of a relaxation system does not exhibit resonance at all. Hence, whereas in simple harmonic motion automatic synchronisation occurs only in a limited region of frequencies near resonance, a relaxation system when subjected to an external periodic force can easily be brought into synchronisation over the frequency range of an octave. Again, when an alternating sinusoidal E.M.F. is applied to a non-linear circuit element it gives rise to currents whose frequencies are multiples of the applied frequency; by contrast, a relaxation system exhibits a frequency which is a sub-multiple of the applied frequency. Examples of relaxation oscillations are heartbeats, flapping of a flag in wind, and periodic flashing of a neon tube.

**E. W. B. Stephens, Ph.D.**

**Oscillograph.** Instrument for demonstrating visibly the nature of the fluctuations of an alternating electric current. The earliest example, the Duddell oscillograph, had a single, very tightly stretched loop of phosphor bronze set between the poles of a magnet which twisted it in proportion to the current passing through it. The loop carried a small mirror, which reflected a beam of light on to a rotating mirror on a moving photographic plate.

This comparatively clumsy instrument has been entirely super-

seded by the cathode ray tube. In this, a focused pencil of electrons is shot down an evacuated tube from a source at one end to a fluorescent screen at the other. On the way it passes between two sets of deflection plates at right angles to each other. One set makes the pencil move steadily from one side to the other in a horizontal line, then jump back suddenly and repeat the process at rapid frequency; this provides a time base. The other set deflects the pencil up and down in proportion to the fluctuating current under investigation. This combination of movements serves to present the wave form of the current visually.

**Osh.** Town of Kirghiz S.S.R., capital of a region of the same name. Said to have been founded by Alexander the Great, it has been an important silk spinning and weaving centre since the 8th century; it also has tobacco factories and metal working plants, and is the starting point of a motor road going S. over the Pamir plateau. Pop. (est.) 50,000. The region produces silk, cotton, wheat, and livestock; coal, mercury, and antimony are mined. Area 17,000 sq. m. Pop. 390,000.

**O'Shaughnessy, ARTHUR WILLIAM EDGAR** (1844-81). British poet. Born in London, March 14, 1844, he obtained a post in the British Museum in 1861. He died Jan. 30, 1881. He is remembered for an ode beginning *We Are the Music Makers*, set to music by Elgar. His works included *Epic of Women*, 1870; *Music and Moonlight*, 1874.

**Oshawa.** Town of Ontario, Canada, on Lake Ontario, 32 m. N.E. of Toronto. It has a harbour and a large motor car factory. Pop. (1956) 50,412.

**O'Shea, KITTY** (1846-1921). Respondent in the Parnell divorce case. Katherine Page Wood married William O'Shea in 1867, but, after the birth of their third child in 1874, husband and wife drifted apart. Her attachment to C. S. Parnell (*q.v.*) led to O'Shea's challenging Parnell to a duel; the quarrel, however, was resolved, and in 1881 Mrs. O'Shea separated from her husband and lived at Eltham with a wealthy aunt. Here Parnell frequently visited her until in 1890 Capt. O'Shea obtained a divorce on the ground of his wife's adultery with Parnell. The scandal that resulted broke Parnell's political career. Mrs. O'Shea married him in 1891, and survived him until Feb., 1921.

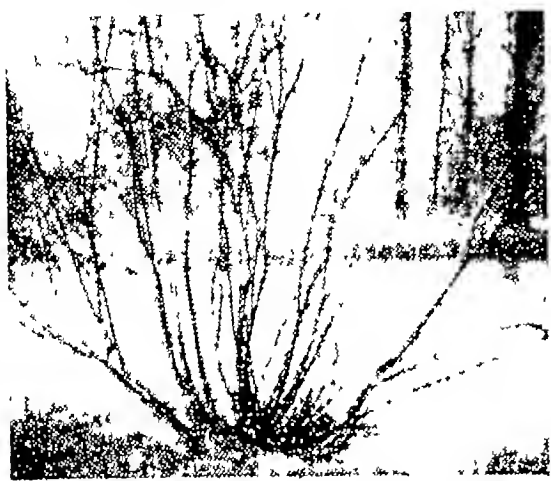
**Oshkosh.** City of Wisconsin, U.S.A., the co. seat of Winnebago co. It stands on Lake Winnebago, 80 m. N.N.W. of Milwaukee, and is served by rlys. and steamers. Lumber products, carriages, wagons, machinery, furniture, tobacco, and flour are among its manufactures. It was originally named Athens, but in 1870 the name of a local Indian chief meaning "claw" or "brave" was substituted. The city was four times rebuilt after fires, 1859-75. Pop. (1950) 41,084

**Osier** (*Salix viminalis*). Shrub or tree of the family Amentaceae. A native of Europe and N. Asia, it forms either a bushy shrub or a tree 30 ft. high, growing in wet places. The long, straight branches, used for wickerwork, are polished when mature. The leaves are narrow-lance-shaped, the edges waved but not toothed, and silvery beneath. The catkins, which mature before the leaves, are golden yellow. The purple osier (*S. purpurea*) does not attain the tree form, and its slender tough twigs have red or purple bark. Several other willows are grown as osiers by keeping the trunk cut close to the ground, and so inducing a plentiful annual

growth of long slender rods. The osiers are cut in spring, when the bark peels easily, leaving the rods white. See Basket.

**Osijek** (Mag. Eszék; Ger. Esseg.). Town of Croatia, Yugoslavia. It stands on the right bank of the river Drava, 100 m. N.W. of Belgrade and is an important rly. junction and trading centre, with flour mills and silk factories. Pop. (1953) 57,320.

**Osimo.** City of Italy, in Ancona prov., 8 m. S. of Ancona. It is the ancient Auximum, colonised by the Romans in 157 B.C. Part of the old wall still exists, and there are Roman antiquities from the site of the ancient forum in



Osier, in winter, showing long straight branches

the Palazzo Pubblico. The cathedral, slightly damaged by shellfire during the Second Great War when the 8th army entered it July 2, 1944, contains 13th-century sculptures. Silk worm breeding is the most important local industry. Pop. (1951) 22,601.

**Osipenko.** A port of Ukraine S.S.R., on the N.W. coast of the Sea of Azov, in Zaphorozhe region, 105 m S.E. of Zaphorozhe town. It makes agricultural machinery and aircraft and has shipbuilding yards and railway repair shops.

It is an important port of entry into the Ukraine of petroleum from the Baku fields. In the vicinity are vineyards. Formerly called Berdiansk, it was renamed Osipenko in 1940. Pop. (est.) 55,000.

**Osiris.** Egyptian deity. Originally the local god of Busiris, he came to be worshipped at Abydos, where his head was said to be buried. A vegetation deity, he became partly assimilated with the sun-god Ra, and with Horus the divine king. He was also identified with other gods, e.g. with Apis as Serapis and with Khons the moon-god. The son of earth and sky, he was brother and husband of Isis, and father of Horus. His brother Set, god of darkness, put him in a coffin which he threw into the Nile, and afterwards cut his body into 14 pieces and scattered them through Egypt, but Isis collected them with one exception, and either buried them separately or resuscitated Osiris by incantations. He was thus god of resurrection and eternal life, and judge of the dead. Pharaoh became Osiris after death; by the New Kingdom every righteous soul could share his after-life. As lord of the underworld he appears with a mummified body, wearing a plumed crown. Ptolemaic temples were erected to him at Canopus and Karnak.

**Oslo.** The capital of Norway, called Christiania 1624-1924. Picturesquely placed at the head of Oslo Fjord, it was named after King Christian IV of Denmark and Norway, who refounded it in 1624, after the destruction by fire of the old city of Oslo founded by Harald Sigurdson in 1048. Built of wood, Christiania suffered frequently from fires; since 1850 brick and stone have been used. The fortress of Akershus, besieged by



Osiris as the moon-god

From a statue in the British Museum



Oslo, Norway. Plan of the Norwegian capital at the head of Oslo Fjord



Oslo arms



the Swedes in 1310, by the Danes 1531-33, and again by the Swedes in 1567 and 1716, is now an arsenal and prison. There are old and new bishop's palaces, a royal palace (1821-28), houses of parliament (1866), law courts, a university (1853), a town hall (1931-50), three museums. The old name Oslo was revived Jan. 1, 1925.

The harbour, formed by two creeks, is generally locked by ice for two or three months during the winter. Shipping and allied trades form the staple industries, but manufactures of paper, leather, soap, matches, linen and woollen goods, tobacco, yarn, spirits, and glass are also engaged in. The motive power for the various factories is derived from the waterfalls of the Akers. The chief exports are wood-pulp, timber, butter, margarine, matches, nails, condensed milk, dried fish, paper, tobacco, hides, seal-skins, ice, and paving stones. It is one of the most valuable ports in the country. There are several fine parks, and a summer palace in one of the many growing suburbs. Oslo has regular steamer communication with several British ports, Amsterdam, and Antwerp, and regular air services with Copenhagen, London, Prague, Frankfurt, and Marseilles. Good roads and several rlys. connect it with Sweden. Pop. 289,000.

On April 9, 1940, without a declaration of war, German warships disembarked troops in the vicinity of Oslo, while troop-carrying planes landed at the airport. The government and royal family moved to Hamar, and by the afternoon the Germans were in possession of the city. Allied aircraft attacked military targets at Oslo during the German occupation, but little damage was done to the city itself. British and Allied delegates arrived at Oslo, May 8, 1945, to receive the capitulation of the German forces in Norway. The Norwegian government returned May 31, the king arriving June 7.

**Oslo Convention.** Agreement signed on Dec. 22, 1930, by the govts. of Netherlands, Belgium, Luxemburg, Norway, Sweden, and Denmark, for a greater measure of free trade and a lowering of tariff barriers and exchange restrictions between the signatories. The same powers were parties to The Hague agreements (*q.v.*). Finland adhered to the Oslo Convention, Feb. 8, 1933.

**Oslo Diet.** Semi-vegetarian diet devised by the Norwegian ministry of Health in 1938. It

was adopted by the British ministry of Food in 1942 and given experimentally to a number of school children, their condition being compared with that of a similar number of normally fed children. A typical Oslo meal consisted of a salad of grated raw vegetables, butter, wholemeal bread, fresh fruit, eggs, and milk. Food rationing prevented the Oslo diet from becoming more than experimental in the U.K.

**Osman** or **OTHMAN I** (1259-1326). Founder of the Ottoman empire. Born in Bithynia, he succeeded to the leadership of his clan in 1288, and gradually conquered the surrounding Turkish and Tartar tribes. Assuming the title of sultan in 1299, he founded the Osmanli or Ottoman dynasty. *See Ottoman; Turkey.*

**Osman Abu Bakr Digna** (d. 1926). Dervish chieftain. A Hadendoa slave dealer at Suakin, he was made governor of Eastern Sudan by the Mahdi (*q.v.*), captured Sinkat and Tokar in 1883, and defeated Baker Pasha's troops at El Teb, Feb. 4, 1884, being himself defeated there by General Graham, Feb. 29, and also at Tamai, March 13. Holding the country round Suakin, he was a continual menace to the Sudan. Captured by the British in 1900, he was imprisoned. He died in Dec., 1926.



Osman Digna,  
Dervish chieftain

**Osmanthus fragrans.** Evergreen shrub of the family Oleaceae, native of Japan and China. It has toothed, lance-shaped, opposite leaves, and yellowish-white, four-lobed, fragrant flowers. The Chinese use the flowers to scent tea.

**Osmiridium.** Natural alloy of the two rare metals of the platinum group, osmium and iridium. In some places the alloy is found with gold dust, in the form of pale, steel-grey grains. As it is very infusible, heavy, and insoluble in gold, it can be separated easily by simply melting in a cone-shaped crucible, when the heavy alloy settles at the bottom of the cone. Because of its great hardness and resistance to wear, it is used for watch pivots, parts of fine instruments and ships' compasses, and for tips of fountain pen nibs, etc. *See Iridosmine.*

**Osmium.** A rare metallic element of the platinum group and

the heaviest of all known substances. It was discovered in samples of platinum ore by Smithson Tennant in 1803. Its chemical symbol is Os, and it is one of the transitional elements of the third long period of the periodic table, with tungsten, rhenium, iridium, and platinum. It has an atomic number, 76; atomic weight, 190.2; density, 22.48 gr. per c.c.; resistivity,  $9.5 \times 10^{-6}$  ohm cm; melting point about 2,700° C.; crystal form, close-packed hexagonal, with lattice constants  $a=2.7298$  and  $c=4.3104$ .

The metal, bluish-white in colour with a high lustre, is usually found associated with platinum, and is extracted by a complex process during the refining of the platinum metals. Less important sources are osmiridium and iridosmine, which are natural alloys, recovered from certain ores, such as the gold deposits of the Witwatersrand in S. Africa. It is extremely hard and infusible, being harder than glass and quartz, but it has few uses in industry, owing to the difficulty of working it and its rapid oxidation at high temperatures. The powdered metal can be compacted into a solid and sintered at 2,000° C., under a controlled atmosphere, and it can be plated on to certain of the base metals, such as nickel, copper, brass, or steel, in the form of rod, wire, tubes, and sheet. Osmium was at one time used for the filaments of electric light bulbs. One of its chief uses is as a catalyst, particularly in hydrogenation processes. When heated in air, it forms at 950° C. a poisonous and irritating tetroxide, volatile at 100° C. *See Osmiridium; Platinum; Powder Metallurgy.*

**Osmosis** (Gr. *osmos*, pushing, impulsion). Physical term. It relates to the flow of a solvent through a semi-permeable membrane by virtue of the existence of osmotic pressure (*v.i.*). The phenomenon plays an important part in animal life, plant physiology, and chemistry. If fruit or vegetables are placed in a sugar or salt solution, liquid may pass out through the skin with consequent shrivelling. On the other hand if placed in fresh water the skin becomes stretched from the inward passage of water.

**Osmotic Pressure.** Pressure exerted by the particles of a substance in solution. If the solution is dilute and the substance does not dissociate, then it exerts a pressure equal to the

gas pressure it would exert if it were a gas at the same temperature, and occupied the same volume. For a non-electrolyte in dilute solution, the osmotic pressure, temperature, and volume obey the ordinary gas laws.

**Osmund** (d. 1099). English bishop and saint. Count of Secz in Normandy, he accompanied the Conqueror to England and was created earl of Dorset. He is said to have been also chancellor of England. He embraced the religious life, and in 1078 was made bishop of Salisbury, where he built a cathedral at Old Sarum about ten years later. He wrote a life of S. Aldhelm, and had considerable skill as a copyist and bookbinder. He died in 1099; and was buried in his own cathedral at Old Sarum. He was canonised in 1457, and his remains were removed to the new cathedral.

**Osmunda**. Genus of ferns, the most important of which is the royal fern (*q.v.*).

**Osmundaceae**. A family of Pteridophyta, consisting of two genera only, *Osmunda* and *Todea*. They have creeping rootstocks, and the sporangia are not covered by a pellicle (indusium), and the spore-capsules split into two valves by a vertical fissure, there being no "ring" as in the other ferns. The spores contain chlorophyll, and soon perish if they do not immediately find conditions favourable for germination.

**Osnabrück**. City of W. Germany, in the *Land* of Lower Saxony. It stands on the Hase, 70 m. W. of Hanover, linked with the Midland canal by a branch waterway. Before the Second Great War it possessed many valuable historical buildings, including the huge cathedral, reconstructed after a fire in 1254, the Gothic church of S. Mary, 14th-15th century; S. John's church, 13th century; the Benedictine convent church, 12th century; and the town hall, built between 1487 and 1512. The bishopric was founded by Charlemagne in 783. The town was a prominent member of the Hanseatic League, and its last sovereign was George III's son, Frederick, duke of York. It became a part of Hanover, and merged with Prussia in 1866. Bombed repeatedly and badly damaged by Allied aircraft during the Second Great War, it was captured by the British 1st commando brigade, April 5, 1945. After the war it lay in the British zone of occupation. Pop. (1955 est.) 126,600.

**Osorno**. Town of Chile, capital of a province of the same name, area 3,500 sq. m. The town lies 80 m. N. of Puerto Montt, at the confluence of the Rahue and Damas rivers. Founded in 1588, it has been much rebuilt in the 20th century. It is an agricultural and industrial centre. There is a summer (Oct.-March) air service. Pop. (1952) town, 40,120, many of German extraction; prov., 123,059.

The snow-capped volcano Osorno, alt. 8,700 ft., lies 58 m. S.E. of the town, to the S.E. of Todos los Santos lake.

**Osprey** (Lat. *ossifraga*, bone-breaker). Bird of prey (*Pandion haliaëtus*), sometimes called the fishing hawk. It is about 2 ft. long, the back and wings are dark brown, the crown of the head and the throat whitish, the under parts white. It is found in nearly all parts of the world, except in deserts and near the Poles, but is rare in Great Britain and was last recorded as breeding in 1908 in a



Osprey. Species of the bird found in Australia

secluded district in N. Scotland. The nest, a very large structure of sticks lined with moss, is usually built in a tree, but where trees are scarce may be made on the ground or on the ledges of cliffs. It is always found near water, as the bird's food consists entirely of fish. The osprey soars to great heights, watching for its prey, on sight of which it darts down with great speed and seizes it with its claws.

The so-called osprey plumes of commerce were taken not from this bird, but from a species of aigrette (*q.v.*).

**Ossa**. Mountain of Greece, in Thessaly. It rises E. of the river Peneus, and with its neighbouring height of Pelion (*q.v.*) is separated from Olympus by the vale of Tempe. The modern name of the chief peak, 6,398 ft. high, is Kissavos.

**Osservatore Romano** (Roman observer). Only daily newspaper published within the Vatican city. It was founded 1890. Written in Italian, it publishes the Vatican court circular and much ecclesiastical news. General news, comments, and articles do not necessarily represent the official point of view of the Church, yet are assumed to be consistent with the attitude of Vatican circles. It circulates among parish priests and missions all over the world, and is also sold by newsagents in Italian cities and the capitals of R.C. countries. As the Fascist control of the Italian press grew tighter in the 1920s and 1930s, the Osservatore Romano became the only paper in Italy providing independent news and comment, and in the late 1930s its circulation soared into hundreds of thousands. Mussolini protested, and the paper ceased to comment on foreign affairs.

**Ossets**. Tall people of Iranian speech found in the Caucasus, Russia; many are light-eyed and blond-haired. The district in which they live is divided by the Caucasus Mts. into North Ossetia A.S.S.R., within the R.S.F.S.R., and South Ossetia autonomous region of Georgia.

N. Ossetia, constituted as an autonomous region, 1924, as an autonomous republic 1936, and extended after the Second Great War, is watered by the Terek (which is harnessed for power) and its affluents; it produces maize, the vine, a fibre plant called kenaf, and market garden crops; lead and zinc are mined. Industries include canning of fruit, starch and molasses making, lumbering, and non-ferrous metallurgy. The capital is Jaujikau (called Orjonikidze during 1933-44). Area 3,500 sq. m. Pop. (est.) 450,000 (80 p.c. of whom are Ossets).

S. Ossetia, watered by the Liakhvi, is a pastoral country with some lumbering and fruit-growing, and mountain health and holiday resorts. The capital Tskhinvali was renamed Stalinir about 1935. Area 1,500 sq. m. Pop. (est.) 120,000 (70 p.c. Ossets).

**Ossett**. Borough of the West Riding of Yorkshire, England, near the Calder, 3 m. W. of Wakefield. It has textile mills, engineering and other works; and near by are coalmines. The fine church of Holy Trinity is modern. At Ossett Common are mineral springs. Ossett was made a borough in 1890. Market day, Fri. Pop. (1951) 14,586.





Ostend, Belgium. Left, the Kursaal and Digue promenade before the Second Great War. Right, reconstructing the latter after the German occupation. The site of the Kursaal, destroyed by Germans, is on the extreme left

**Ossian.** Loch of Inverness-shire, Scotland, 3 m. long. It lies 17 m. E. by S. of Fort William, 1,269 ft. a.s.l. Near by is Corrour, highest point on the Glasgow to Fort William rly.

**Ossian** (Ir. Oisín). Irish hero and bard of the 3rd century. The son of Finn Mac Cumhal, he is traditionally the great poet of the Gaels, and is himself a prominent figure in hundreds of ballads and tales from the 12th to the 18th century. His fame spread to the Scottish Highlands. He fled after the Fenian defeat at Gabhra in 293. A variant of a widespread fairy tale relates that he was lured away by the daughter of the king of the Land of Youth, where he spent 300 years, and on his return became old and decrepit. Meeting S. Patrick, he recounted the events of the past to him. See Finn; Gaelic Language and Literature; Macpherson, J.

**Ossietzky, CARL VON** (1889-1938). German pacifist. He was born at Hamburg, Oct. 3, 1889, and was early prominent in the German pacifist movement. In 1928 he became editor of the Berlin weekly *Die Weltbühne*. He published detailed accounts of various infringements of the Versailles Treaty, and was sentenced to 18 months' imprisonment for treason, Oct. 23, 1931. Released under amnesty in 1932, he was later sent to a concentration camp by Hitler. He was awarded the 1935 Nobel peace prize, but was not allowed to receive it; Hitler decreed that no German was in future to accept a Nobel prize. Ossietzky died of tuberculosis, May 4, 1938. After the Second Great War his journal was edited by his widow and published in Berlin.

**Ossification.** Formation of bone. Natural ossification is the process by which the cartilage formed in the developing organism

*in utero* is gradually converted into bone, and the primitive tissue of the skull is formed into the bones of the skull. Ossification also occurs in the process of repair of fractured bones, a mass of new bony tissue called callus being formed between and around the broken surfaces. In certain diseases of the joints ossification of tissue occurs, and in extreme cases the articular surfaces may become united, all movement being lost.

**Ossington, JOHN EVELYN DENISON, VISCOUNT** (1800-73). British politician. Born at Ossington, Nottinghamshire, Jan. 27, 1800, and educated at Eton and Christ Church, Oxford. In 1823 he became Whig M.P. for Newcastle-under-Lyme. He was Speaker of the house of commons, 1857-72, when he retired and was created Viscount Ossington. The title became extinct on his death, March 7, 1873. The Speaker's Commentary on the Bible was brought out at his suggestion.

**Ossory.** Name of an old Irish kingdom. It existed for nearly 1,000 years, falling to pieces just before the English conquest of Ireland in the 12th century. It was part of the modern province of Leinster, roughly that now covered by Offaly, Leix, Kilkenny, and Carlow. In 1527 Piers Butler, afterwards 8th earl of Ormonde, was created earl of Ossory, and the title is still borne by the marquess of Ormonde.

**Ossovietz** (Polish Osowiec). Town and fortress of Poland. It is on the river Bobr, 30 m. N.W. of Bialystok. Its position in the valley of the river, dominating railways and important roads, rendered it of strategic importance during the First Great War. It was besieged by the Germans from Sept. 25 to Oct. 2, 1914, and again during Feb. and March, 1915, but the Russian garrison held it until the general Russian retreat in August.

**Ostade, ADRIAN VAN** (1610-85). Dutch painter. Born at Haarlem, he studied under Frans Hals (*q.v.*), and spent the whole of his life at Haarlem, dying there April 27.



A. van Ostade. A peasant scene, portrayed by this Dutch genre painter

1685. A prolific painter of peasant genre, he was influenced in turn by Adrian Brouwer and Rembrandt. His brother Isaac (1621-49) painted landscapes.

**Osteitis.** Inflammation of compact bone. The term osteomyelitis is used when the central or medullary cavity of the long bone is involved. The commonest cause is injury to the bone, with or without an open wound. An acute inflammation of the bone sometimes occurs in children, and may follow scarlet and other fevers. Chronic inflammation may follow an acute attack of inflammation or tuberculosis or syphilis. Penicillin and the sulpha drugs have altered the treatment and outlook.

**Ostend** (Flemish Oostende, east end). Town of Belgium, in W. Flanders. It lies in flat country on the N. Sea coast, 14 m. W. of Bruges, with which it is connected by rly. and canal. Ostend is the principal sea-bathing resort of Belgium, attracting visitors from many countries, and possesses a large kursaal, raccourse, theatres,

and many other attractions. The digue, which forms the chief promenade, stretches to Mariakerke, 3 m. to the W. It harbours the principal fishing fleet of the seaboard, is a seaport of importance with cross-Channel service to Dover, and is the terminus of express lines to many parts of Central Europe. Its oyster-beds are famed, and there is a local lace industry. The town is mostly modern. The hôtel de ville is an early 18th century building on the Place d'Armes; the large modern Gothic church of S. Peter and S. Paul was built in 1907. The Parc Léopold, with ornamental waters, lies in the centre of the town.

Ostend is recorded as connected by canal with Bruges as early as 1284; as a port and fishing harbour it dates from the 16th century. It suffered severely in the long siege of 1601-4, when it was captured by the Spanish general Spinola. Its fortifications were demolished in 1865. In the First Great War it was occupied by the British until Oct. 14, 1914, when the Germans captured it and converted it into a naval base. On April 22, 1918, an expedition set out from Dover to block the harbours of Ostend and Zeebrugge, but was foiled by a change of wind which dissipated the smoke-screen. A second attempt was made on the night of May 9-10. A cruiser was filled with concrete, and her captain attempted to push into the harbour and scuttle her in the entrance. The attempt was not completely successful, and the Germans were able to keep open a channel about 30 ft. wide. (See Keyes, Baron; Vindictive.)

In the Second Great War the Germans bombed Ostend on May 28, 1940, and took it the next day. As a seaplane base and potential invasion port it became a target for the R.A.F., and was bombarded by units of the Royal Navy, Feb. 11, 1941. The Canadian 18th armoured bde. entered it Sept. 8, 1944, the Germans having left.

**Ostend Company.** Trading company with headquarters at Ostend and stations on the Indian coast, established in 1717 for eastern trade, under the patronage of the emperor Charles VI. Its success aroused the jealousy of England, the Netherlands, and others, which united to force its dissolution. In 1727 the emperor suspended its Charter, and the company ceased to exist in 1731.

**Osteology** (Gr. *osteon*, bone; *logos*, science). Science pertaining to bones. See Bone; Skeleton.

**Osteopathy** (Gr. *osteon*, bone; *pathos*, suffering). Term used for a disease of a bone. It also refers to the treatment of bone disorders by a process of manipulation. The U.S.A. is the home of the skilled osteopath, but many registered medical practitioners in Great Britain have graduated in this branch of knowledge. There can be little doubt that adjustment of an unbalance of the bony framework of the body may result in the alleviation or cure of many pathological conditions. See Bone.

**Ostergötland** OR LINKÖPING. Lan or co. of Sweden. It lies between the Baltic and Lake Vatter (Wetter) and contains many lakes, of which the largest is Lake Sommen. The river Motåla drains a fertile plain. Cheese is the main farm product, and there are copper and iron mines. Linköping is the chief town and rly. junction. Area, 4,266 sq. m. Pop. 332,933.

**Osterley.** Residential suburb of London. Situated in the boroughs of Heston and Isleworth, Middlesex, it is one m. N.E. of Hounslow and is served by London Transport's Piccadilly-Hounslow line. It takes its name from the mansion of Sir Thomas Gresham (1519-79). This was rebuilt for Francis Child, the banker, by Robert Adam, and later became the seat of the earl of Jersey. The only remains of the original house are the Elizabethan stables. An offer, 1946, of the estate to the National Trust was withdrawn 1948; but in 1949 the Trust accepted the gift of Osterley house and 140 acres of the park. The house was leased to the Ministry of Works as a public museum, and was placed in the charge of the Victoria and Albert Museum.

During the Second Great War the grounds were used as a battle school for the Home Guard.

**Osterode.** Tn. of Lower Saxony, W. Germany, in the Harz mountains, on the river Söse, 20 m. N.E. of Göttingen. Its ancient buildings have included the church of S. Giles, built 724 and destroyed and rebuilt in the 16th century; a castle dating from the early 12th century; and various warehouses.

etc., used in the medieval corn trade. Its main industry has been the manufacture of textiles. After the Second Great War it was in the British zone. Pop. (1939) 7,882; (1949) 14,200.

**Osterode** (Pol. Ostrodá). Town of Poland, in the prov. of Masuria. It is 22 m. W. of Allenstein (Olsztyn), on lake Drewenz. It was formerly a centre of the timber and brick trade of the neighbourhood. It lies in the part of the former German prov. of E. Prussia taken over by Poland in 1945. Pop. (est.) 16,000.

**Ostersund.** Town of Sweden. Situated on the E. side of Lake Storsjö, it is joined with the island of Frösö by a bridge 1,420 ft. in length. It is a centre for the timber trade. Pop. (1956) 23,518.

**Östfold.** County of Norway. On the W. is Oslo fiord, on the E. and S.E. Sweden. Mainly agricultural, it has a somewhat milder climate than other parts of southern Norway. The towns include Fredrikstad, Sarpsborg, and Mysen. Östfold has an area of 1,614 sq. m. Pop. (1950) 185,419.

**Ostia.** The port of ancient Rome, 14 m. S.W. of the city on the S. bank of the Tiber. It was said to have been founded by Ancus Marcius, but the earliest settlement revealed by excavation has been a Republican fort of



Ostia, Italy. The ruins of the theatre with the temple beyond surrounded by a portico containing shipping offices of this port of ancient Rome

c. 330 B.C., built when a colony was founded here. The port became important in Republican times and suffered damage in the war between Marius and Sulla. Sulla gave the town, now a large one, new walls. Ostia grew with the growth of Rome, and became a city of c. 100,000 inhabitants. Owing to the silting of its old harbour, Claudius built a new one



in A.D. 42, 2½ m. to the N., Portus Ostiae or Portus Augustae, with lighthouse and moles. Trajan added a new hexagonal basin, 100-106. But the main town retained its commercial importance into the 4th century. As Rome decayed Ostia became impoverished; the barbarian invasions of the 5th century finished it: by the end of that century it had been abandoned, and its ruins were gradually covered with sand.

Medieval Ostia was founded in 830 by Gregory IV in the neighbourhood of the old town. The present castle was built in 1583-86. Its prosperity disappeared when the N. arm of the river was re-opened in 1612.

The excavation of ancient Ostia, begun late in the 19th century, was actively prosecuted after the First Great War by G. Calza. Excavated buildings include the forum with capitolium and basilica; baths; theatre with an adjoining square where mosaics in the surrounding arcades mark the offices of trading corporations from all over the world of the day, e.g. Gaul, Carthage, Alexandria; grain warehouses; shops; temples, including several of Mithras; and a Christian church of the time of S. Augustine. Specially important are the large urban *insulae* or house blocks with great apartment houses of which 4th and even 5th storeys can be traced.

**Ostland** (Ger., east state). Name given by the Germans to the territory set up by them in July, 1941, comprising part of N.E. Poland, White Russia, Estonia, Latvia, and Lithuania.

**Ostmark**, DIE. Name given by National Socialist Germany to the country of Austria on its incorporation into the German Reich, March 13, 1938. The name means East March. See Austria.

**Ostraca** (Gr., hard shells). Inscribed potsherds and stone slabs, principally from ancient Greece and Egypt. The British Museum contains one of those whereby Themistocles was ostracised in 471 B.C. The name has been transferred to the pottery fragments and limestone slabs, employed in Egypt for ephemeral ink-records. Many thousands have been collected, bearing Aramaic, Greek, Egyptian, and Coptic records ranging from 400 B.C. to A.D. 900. At the Arab conquest three Christians copied the Greek gospels on numbered potsherds, whereof 20 remain. See Graffito.

**Ostracism**. Political practice introduced by Cleisthenes at

Athens in 508 B.C., and subsequently employed in other Greek states. Once a year every Athenian citizen had the privilege of writing on an oyster-shell (*ostrakon*) the name of any statesman whom he thought it would be desirable to send into exile. In the event of there being 6,000 votes adverse to any statesman, the decree of banishment, or ostracism, as it came to be called, took effect. The period was first for 10 years, and subsequently for five. It did not involve any loss of civic rights, and the victim could be recalled before the end of his term of exile. Noted Athenians who suffered ostracism were Miltiades, Themistocles, Aristides, Cimon, and Alcibiades, by the last of whom the practice was abolished. See Greece.

**Ostracoda**. A class of small crustaceans. The body is unsegmented and enclosed in a bivalve carapace from which the head does not protrude. They swim by means of their antennae, which are jointed and have brush-like terminations. In some species the eggs are carried about in the shells, and in others are laid on water plants. Most of them live in the sea, but a few species are found in fresh water, as the common cypris of British ponds. They are all carnivorous and play an important part as scavengers.

**Ostrava** OR MORAVSKA OSTRAVA (Ger. Mährisch-Ostrau). Town of Czecho-Slovakia, in Moravia, capital of a region of the same name, area 1,750 sq. m. It is situated 87 m. N.E. of Brno, on the Ostravice, a tributary of the Oder, and is the centre of an important industrial area. Owing to its position on a leading coalfield, it has numerous iron-works, blast furnaces, and coke ovens. It makes soap, chemicals, and candles, and has a mining academy. Pop. (est. 1956) town, 200,000; region, 800,000.

During the Second Great War, when Ostrava was in German occupation, it was attacked from the air by the Allies. Ukrainian and Czecho-Slovak troops liberated it April 30, 1945.

**Ostrer**, ISIDORE (b. 1889). British financier. One-time senior partner in the banking house of Ostrer Bros., he was for a time proprietor of the Sunday Referee newspaper, and until 1941 chairman of the Gaumont-British picture corporation. He wrote extensively if unorthodoxly on economics. His brother Mark was a leading figure in the British film industry, chairman or managing

director of many companies including Gaumont-British and Gainsborough. Another brother, Maurice, also on the board of most of these companies, produced films, including *We Dive At Dawn*, 1942; *The Man in Grey*, 1943.

**Ostrich** (*Struthio camelus*). Largest living bird. Found wild in Africa, Arabia, and Iraq, it is



Ostrich. Specimen of the African ostrich  
Gambier Bolton, F.Z.S.

usually placed in the super-order Palaeognathae, the breastbone lacking the keel to which the strong flight muscles of most birds are attached. The wings of the ostrich are small and useless for flight. A fine specimen stands nearly 5 ft. high at the back, and its neck accounts for about 3 ft. more. In the male the plumage of the body is black, with white plumes on the wings and tail, that of the female being grey. The neck is covered with down. The legs, which are long and strong, and part of the thighs, are bare, and the feet have only two toes—a feature peculiar to these birds. The head is relatively small, and is broad and flattened. The beak is short and broad, and the gape very wide.

Ostriches are found in open country, especially desert. Their speed when running with outspread wings exceeds that of any mammal; but their habit of running in great circles enables a well-mounted hunter to get within shot by cutting them off. They feed mainly on grass and leaves, but are practically omnivorous, and will swallow small mammals, birds, or reptiles. The cock bird, in the breeding season, runs with three or four hens, which lay in a common nest consisting of a shallow hole in the sand scraped by the cock. There are usually about 20 eggs in a nest, but the birds often lay a few round it which fail to be hatched.

During the day the eggs are usually left to the heat of the sun,

but the cock incubates them at night. In cooler weather he sometimes sits during the day as well, and is then relieved by the hens while he goes in search of food. The birds are extremely wary, and make off at the least alarm; but a male bird, if cornered, is a dangerous foe, as he can strike terrible blows with his powerful legs. The flesh of the ostrich, except when young, is unfit for food, but the eggs are highly prized by the natives.

Owing to the value of its plumes the ostrich was formerly hunted to extermination in many districts, but the same cause has now saved it from extinction. The establishment of ostrich farms dates from about 1867, and has now developed into an important industry in S. Africa, Australia, the U.S.A., Algeria, and Argentina; but attempts to introduce it to Europe have not proved very profitable.

The birds are given a free run over a large extent of open ground, and pick up most of their food. The plumes are taken usually three times in two years, the birds being driven into small enclosures and hooded to keep them quiet. The feathers are then cut 2 ins. from the sockets, which causes little or no pain to the birds. See Australia; Cassowary.

**Ostrog.** Town of Ukraine S.S.R. It is in the region of Rovno, on the river Goryn, 120 m. N.E. of Lvov. There is trade in corn, wool, leather, timber, and sugar. Here the first complete old Slavonic translation of the Bible was issued in 1581.

**Ostrogoths.** Eastern branch of the Gothic people. It was formed of those Goths who remained in their homes on the Dnieper when the others, who were called Visigoths, moved W. in the 3rd century. The Ostrogoths, under Hermanaric, ruled eastward to the Don, and their supremacy was recognized far to the N.; but they were overthrown by the Huns, after whose fall they began a new era of conquest. Their power was at its highest under Theodoric the Ostrogoth, who reigned 473-526 (not to be confused with Theodoric, king of the Visigoths).

**Ostrolenka.** Town of Poland. It stands on the Nareff and the Nareff rly., 20 m. S.W. of Lomza. Agriculture, hunting, and fishing are the chief occupations of the dist., where much amber has been found. Here the Russians were defeated by the French in 1807,

and the Poles by the Russians in 1831.

**Ostrovsky, ALEXANDER NIKOLAEVITCH** (1823-86). Russian dramatist. Son of a lawyer, he was born at Moscow, March 31, 1823, and educated at the university there. He worked as a clerk at Moscow's juvenile court and commercial court, an occupation which provided him with material for many of his 50 plays, between 1847 and 1886. The first of his plays to attract attention was *The Bankrupt*, 1850, which was banned until 1860. It was later renamed *It's All a Family Affair*. Of plays dealing with the lives of the *petit bourgeois* the best-known included *Everyone in his Own Place*, 1853; and *The Storm*, 1860 (translated into English by C. Garnett in 1898). He also wrote several historical dramas. He became director of the Moscow Theatre and the school of dramatic art, both of which he helped to found. He died May 28, 1886. English versions of his plays, e.g. *Wolves and Sheep*, *Larissa*, *It's All a Family Affair*, and *The Diary of a Scoundrel*, have been produced in London.

**Ostuni.** City of Italy, in Brindisi prov., 22 m. N.W. of Brindisi city. The cathedral has a Gothic façade; the town library contains a valuable collection of antiquities. Pop. (1951) 31,325.

**Ostwald, WILHELM** (1853-1932). German chemist, born at Riga (now in Latvia S.S.R.), Feb. 2, 1853.

He was professor of physical chemistry at Leipzig, 1887-1906, and in 1909 was awarded the Nobel prize for chemistry in recognition of his experimental work mainly in the sphere of electro-chemistry. His discovery that oxides of nitrogen could be formed by oxidising ammonia proved of great value to German manufacturers of explosives in the First Great War. His works included textbooks on general chemistry and inorganic chemistry. He died April 4, 1932.

His son, Wolfgang Ostwald (b. June 27, 1883, at Riga), studied at Berkeley university, Calif., U.S.A., lectured on biology at Leipzig, and held there from 1922 the first chair in colloidal chemistry. This

branch of science, which resulted chiefly from the work of Thomas Graham, was fully developed only by Ostwald, whose books on it became international standard works.

**Ostwald's Process.** Method of oxidising ammonia to form oxides of nitrogen from which nitric acid and nitrates are made. Wilhelm Ostwald, while professor of chemistry at Leipzig, worked out a process in 1900 by which a mixture of ammonia and air is passed over a catalyst, consisting of platinum with a specially prepared surface. The use of this process and the modifications developed during the First Great War enabled Germany to continue making explosives after the Allies had cut off the import of Chilean nitrate.

**Ostyak** OR **OSTIAK.** Tartar name, meaning barbarian, for three primitive tribes in W. Siberia. The Ugra, of Finno-Ugrian stock and speech, numbering perhaps 18,000, inhabit the Ob and Irtysh banks between Tobolsk and Tomsk. The Samoyedic Ostyak, northward to the Taz basin, are properly Samoyeds. The Yenisei Ostyak, a few hundreds, preferably called Yeniseians or Tubas, are aboriginal fishers and hunters, retaining an archaic Tibeto-Chinese dialect. Shamanism prevails in all the tribes.

**Osuna.** Town of Spain, in the prov. of Seville. It is built on a hill on the edge of the plain of the Guadalquivir, 51 m. E. of Seville. Woollens, soap, and hats are manufactured. The castle and Gothic collegiate church crown the hill. The castle has been, since 1562, the seat of the dukes of Osuna, of whom the third, Pedro, 1579-1624, achieved military distinction under Philip III; the church was built in 1534 on a Moorish substructure. The town was captured from the Moors in 1240. The university, founded 1549, was suppressed in 1820. Pop. (1950) 23,250.

**Oswald** (d. 642). King of Northumbria and saint. A son of King Ethelfrith of Bernicia, he passed some years in exile, being at one time in Iona. Returning to Northumbria, where a British king had killed his brother, he crushed the invaders near Hexham in 635 and became king of both Bernicia and Deira. On Aug. 5, 642, he was defeated and killed at Oswestry by Penda, king of Mercia. Oswald is chiefly known for his efforts to promote Christianity, one of his acts being to found the bishopric of Lindisfarne. He made his kingdom for a short time the most powerful in the land.

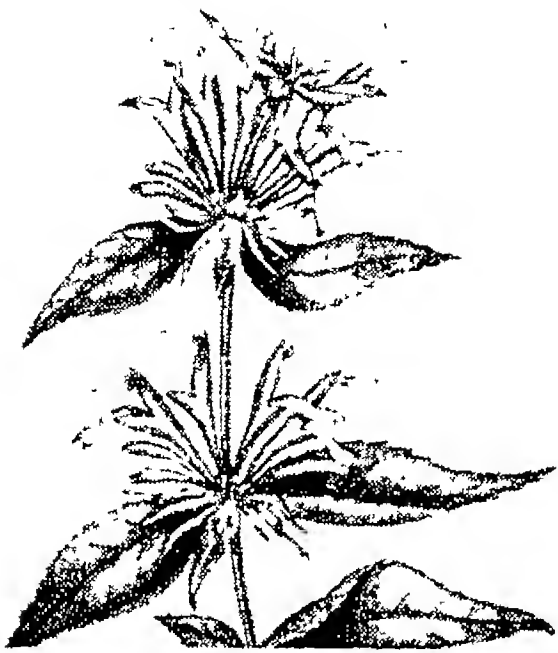


Wilhelm Ostwald,  
German chemist



Canonised, Oswald has a festival which is celebrated on Aug. 5.

**Oswald** (d. 992). English prelate. A nephew of Archbishop Odo of Canterbury, who educated him, he went to France and became a monk, but was recalled about 959 and made bishop of Worcester. He founded Ramsey Abbey, Hunts, and became arch-



Oswego Tea. Stem with leaves and flower whorls of the N. American herb

bishop of York in 972, but still retained charge of the diocese of Worcester. An energetic prelate and a great encourager of learning, he died Feb. 29, 992.

**Oswaltdwistle**. Urban dist. of Lancashire, England. It is 3 m. E. of Blackburn, on the rly. and the Leeds and Liverpool Canal. The chief industries are the making of cotton goods, chemicals, paper, and pottery, while around are stone quarries and coal mines. The district of Peelfold is associated with the Peel family. Pop. (1951) 12,133.

**Oswego**. City of New York, U.S.A., the co. seat of Oswego co. It stands at the mouth of the Oswego river on Lake Ontario, 36 m. by rly. N.N.W. of Syracuse, and is served by the New York Central and Hudson River and other rlys., and by the New York state barge canal, of which it is a terminus. A port of entry, it has a good harbour with accommodation for large vessels, and carries on a trade in coal, lumber, and grain. Manufactures include starch, corn-flour, pumps, engines, boilers, tools, woollen goods, hosiery, matches, and boxes. A fall of 34 ft. in the Oswego river furnishes water power. Pop. (1950) 22,647.

Founded in 1724, Oswego was incorporated in 1828, and became a city in 1848. An important strategic point during the various American wars, it was fortified in 1755, but captured and demolished by Montcalm in 1756. In 1759 Amherst left here with 10,000 men on his journey down the St.

Lawrence to meet Wolfe at Quebec; in 1766 Sir William Johnson received here the submission of Pontiac; and it was captured by the English in 1814.

**Oswego Tea** (*Monarda didyma*) OR BEE BALM. Perennial herb of the family Labiatae, native of N.

America. It has square, somewhat hairy stems, and opposite, oval-lance-shaped, bristly leaves, which have a mint-like odour. The bright scarlet, two-lipped, tubular flowers are arranged in one or two whorls. The bracts beneath the flowers are coloured red. The folkname indicates a use that is sometimes made of its leaves.

**Oswell**, WILLIAM COTTON (1818-93). British hunter. Born at Leytonstone, April 27, 1818, he entered



W. C. Oswell, British hunter

the East India Company's service in 1837, and spent ten years at Madras, where he developed a gift of acquiring native languages and became a skilful elephant catcher. Visiting South Africa for his health, he spent two years exploring and hunting, accompanying Livingstone in 1849 on the journey in which Lake Ngami was discovered. Oswell hunted much big game during this expedition, as also in 1851, when he and Livingstone discovered the Zambezi. After wanderings through N. and S. America, 1855-56, he settled in England, where he died May 1, 1893.

**Oswestry**. Borough and market town of Shropshire, England. It lies 20 m. by rly. N.W. of Shrewsbury. Historical associations start in 642, when Oswald of Northumbria was slain here by Penda of Mercia. The town grew up round a monastery; it had a Norman castle, now destroyed, to watch the Welsh border; and was made a corporate town in the 12th century. The chief building is the church of S.



Oswestry, Shropshire. Parish church of S. Oswald, restored 1893-94

Oswald, restored in the 19th cent. The grammar school dates from 1407. Locomotives and wagons, agricultural machinery, plastic and aluminium goods and clothing are made, tanning is carried on. Oswestry gives its name to a co. constituency. Market day, Wed. Pop. (1951) 10,712.

**Oswiecim** (German Auschwitz). Town of Polish Silesia, 33 m. W. by S. of Cracow. During the Second Great War it was captured Jan. 27, 1945, by the Russians, and found to have been the site of the worst of all German "extermination camps." With space for 250,000 inmates, this group of camps had gas chambers which could kill thousands daily, and a crematorium which could dispose of 280,000 corpses a month. It is estimated that nearly a million men, women, and children were destroyed there at Himmler's orders during 1939-45 by "cyclone" gas, which killed within 10 minutes; victims were sent into the chambers in herds, having been stripped of clothes, rings, gold teeth, hair, and any artificial limbs. Doctors carried out experiments on inmates of the camp, e.g. in sterilisation of women, artificial infection with cancer, outside the range of civilized practice. Joseph Kramer (q.v.) was at one time commandant. Rudolf Hoess, who later commanded, was executed April 15, 1947, and the camp was turned into a museum. *Pron.* Os-we-ett-sim. See Concentration Camp.

**Otago**. Largest province of the South Island, New Zealand. It has Canterbury province on the N.E. and Westland on the N.W. In the West it is mountainous, containing a section of the Southern Alps, from which drains the river system of the Clutha connected with the lakes Wakatipu, Wanaka, and Hawea. The rainfall varies greatly: in the S.W. it exceeds 100 ins. annually; near Dunedin, the capital, it is 30 ins.



Oswestry arms

and between Queenstown and Oamaru is the driest part of New Zealand, a semi-desert with less than 20 ins., where irrigation is essential. Wheat and oats are grown and sheep are reared. Gold is dredged from the Clutha gravels. Rlys. connect Dunedin with Christchurch, Bluff, and the Clutha. The estuary at Dunedin is called Otago Harbour. Otago university is at the capital.

Settlement began in 1848, when a number of Scots landed under the auspices of the Free Church of Scotland. Southland prov. was separated from Otago in 1861, in which year gold was discovered at Gabriel's Gully. Provincial administration ceased in 1875. The first shipment of frozen meat left Port Chalmers in 1882. The area of Otago is 25,220 sq. m. Population (1951) 236,750.

**Otalgia** (Gr. *otos*, of the ear; *algos*, pain). Ache or pain in the ear. Application of glycerine and carbolic or other dehydrating substance may relieve distress until the cause is found and cured.

**Otaru.** Seaport of Japan, in Hokkaido. Shut in by hills, N., W., and S., the town faces the sea on the E.; the harbour is protected on the N.W. by a small pen., to which a long breakwater has been added. A business centre and a seaport, it has considerable trade with Honshu, Karafuto (Sakhalin), and Asiatic Russia. Close by are the Temiya coal pier and the Takashima marine products experimental station. The port is on the main rly. line of Hokkaido, 20 m. N.W. of Sapporo, the capital, and 159 m. N. of Hakodate. In 1872 it was a fishing village with 4,000 inhabitants. Pop. (est.) 160,000.

**Otavi.** Mining centre of Damara-land, S.W. Africa. It is connected by rail with the coast at Swakopmund and Walvis Bay. In the neighbourhood are rich deposits of copper and lead, worked by the Otavi Mining and Railways Co. at 5 centres—Tsumeb, Guchab, Great Otavi, Asis, and Otavi Valley.

**Otello.** An opera by Verdi. Founded on the Shakespearian tragedy *Othello* (*q.v.*), the libretto by Boito was set in 4 acts, and the music composed by Verdi. Considered one of his finest operatic feats, it was produced at La Scala, Milan, Feb. 5, 1887. Its first performance in England was at the Lyceum Theatre, London, July 5, 1889, and it was first sung in English by the Carl Rosa Company in 1895. Rossini composed an opera of the same name, first given at Naples in 1816.

**Otford.** Village of Kent, England, 2½ m. N. of Sevenoaks. The Pilgrims' Way runs by towards Wrotham. The Romans encamped along the banks of the Darent, and Offa, king of Mercia, fought a victorious battle here. Dane's Hollow commemorates a battle fought by Canute. There are impressive ruins of a Tudor palace where Henry VIII stayed on his way to the Field of the Cloth of Gold; rebuilt by Warham, it was one of the 16 houses of the archbishops of Canterbury from Becket to Cranmer. Otford has a rly. station. Pop. (1951) parish, 2,437.

**Othello, THE MOOR OF VENICE.** Tragedy by Shakespeare. It presents the story of Othello, a noble Moor in the army of Venice, and the poisoning of his mind against his faithful wife Desdemona, daughter of a Venetian senator, by the evil cunning of his trusted ancient (standard-bearer). Iago, one of Shakespeare's outstanding villains. Othello kills his wife by smothering her; then, convinced of Iago's perfidy, kills himself.

The play, the most symmetrical of Shakespeare's tragedies, is mainly domestic. It was written about 1604, acted at Whitehall, Nov. 1, 1604, and printed in quarto 1622 and 1630, and in the first folio of 1623. Based on Cinthio's *Hecatomithi*, iii, 7, and in 5 acts, its text varies, but as usually printed it contains 3,324 lines, including 541 of verse, 2,672 of blank verse, and 86 pentameter rhymes. Most leading Shakespearian actors have essayed the part of Othello; but apart from Edmund Kean, at Drury Lane, May 5, 1814, and Henry Irving, who alternated the parts of Othello and Iago with Edwin Booth, at the Lyceum, 1881, the outstanding modern interpreters of the Moor were Italian—Salvini, at Drury Lane, 1875; and Grasso, at the Lyric, 1910. See *Desdemona*; *Iago*.

**Otho, MARCUS SALVIUS** (32–69). Roman emperor, born April 28, 32. He was sent as governor of Lusitania in 58 for refusing to divorce his wife at Nero's command. He joined Galba in the rising against Nero, but, disappointed at not being designated as Galba's successor, took advantage of the latter's unpopularity to form the conspiracy which resulted in his murder. Otho was proclaimed emperor Jan. 15, 69, but Vitellius was also proclaimed by the legions in Germany. The rival forces met at Bedriacum, where Otho was defeated, and on April 16 he put an end to his life.

**Otira Gorge.** Pass in the Southern Alps, New Zealand. Connecting the provinces of Canterbury and Westland in South Island, it rises to a saddle, Arthur's Pass, 3,030 ft., between peaks, of which Mt. Barron on the S. has an alt. of 5,660 ft. Since 1866 the gorge has been crossed by a road made in the days of the boom of the Westland gold diggings and since used by coaches. A tunnel 5¼ m. in length was cut, and a rly. runs through the gorge.

**Otitis.** Inflammation of the organ of hearing. It may attack the outer ear, the middle ear, or the internal ear, and in all cases it produces deafness. In the two former conditions the trouble is known as conduction deafness; in the latter as nerve deafness. These two varieties can easily be distinguished by holding a vibrating tuning-fork opposite the ear. When the note is just inaudible in this position, the end of the fork is placed on the bone behind the ear. If it is again heard, conduction deafness is indicated; otherwise nerve deafness.

External otitis is an inflammation of the skin of the outer ear. There is some discharge from the skin of clear fluid containing scales, which are moistened and loosened by the discharge. The deafness is slight. There is some pain, more often considerable itching in the ear, which should be treated with soothing disinfectant.

Otitis media is an inflammation of the middle ear. It may be a dry or moist inflammation without the formation of pus (catarrhal otitis media), and occurs more often at or past middle life, and in rheumatic subjects. The condition is aggravated by any catarrh of the nose and throat, which should be carefully treated if present. Should the inflammation attack the mastoid process it may spread to the brain. As it may attack the brain indirectly, with fatal consequences, its prevention and cure are of real importance. Children with enlarged tonsils and adenoids should have them treated early. Great care should be taken to keep the nose and throat clean during an attack of scarlet fever or measles. Inflammation of the mastoid, indicated by pain, tenderness, and sometimes swelling behind the ear, demands urgent operative treatment. The introduction of penicillin and the sulpha group has altered the treatment. See *Ear*.

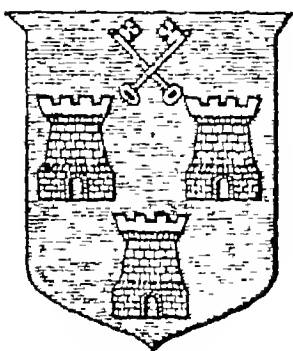
**Otley.** Market town and urban dist. of the W. Riding of Yorkshire, England. It stands on the Wharfe,





Otranto, Italy. Ruins of the castle built, about 1450, by Alphonso of Aragon

10 m. N.W. of Leeds by rly., and has good bus services to Leeds, Bradford etc. The chief building is the restored Perpendicular church of All Saints, containing monuments to the Fairfax family, whose seat, Denton Park, is in the neighbourhood. There is a grammar school founded in the 17th century. The town has an agricultural trade and manufactures machinery and leather goods. In the vicinity are stone quarries. Overlooking the town to the immediate S. is the Chevin Hill, 925 ft. At one time Otley sent two members to parliament. It is now in the co. constituency of Ripon. Market day, Fri. Pop. (1951) 11,568.



Otley arms

**Otoliths.** Ear stones, or chalky concretions in the inner ear of many animals. They occur in vertebrates in the fluid of the internal ear, and their function is that of an organ of balance. They are best seen in the fishes, where they are often large and porcelainous, as in the cod tribe. They occur in many vertebrates and some molluscs.

**Otomí.** Group of American Indian tribes who live in the Mexican states of Guanajuato, Hidalgo, and Mexico. They number perhaps 200,000, not counting the allied Mazahua, and Chichimec. Small, dark, roundish-headed, they represent the primitive inhabitants of the Anahuac plateau, who were driven into the uplands by the Nahua (Aztec) invaders, and still preserve their pre-Toltec culture.

**Otranto.** City of Italy, in the prov. of Lecce, Apulia. It is on the S.E. coast on the strait of the same name, 45 m. S.E. of Brindisi, with which it is connected by rly. It was destroyed by the Turks in 1480. The cathedral contains a remarkable mosaic pavement of 1166; the church of San Pietro has Byzantine frescoes. The castle, built by Alphonso of Aragon and strengthened by Charles V, gives its name to a romance by Horace Walpole, published in 1764. In the Second Great War the whole Otranto peninsula was occupied by Allied troops without opposition by Sept. 12, 1943. Pop. (1951) 3,430.

**Otranto, STRAIT OF.** Outlet of the Adriatic Sea between S. Italy and Albania. It is 40 m. wide; a cable connects the ports of Otranto and Valona. During the First Great War, British drifters guarded the mines and anti-submarine nets laid there. Two attacks were made on the drifters, July 9, 1916, and May 15, 1917; many were lost.

**Otsu.** City of Japan, in Honshu. Situated on the S. shore of Lake Biwa, 10 m. by rly. E.S.E. of Kyoto, it is a centre for the local hemp industry. Pop. 58,000.

**Ottakar OR OTTOKAR.** Name of two kings of Bohemia. Ottakar I, who belonged to the family of the Premyslides, seized Bohemia 1192-96, but had to fight hard for recognition. He took part in the contest for the German throne between Otto IV and Philip of Swabia. By 1222 he had gained Moravia. Dying in 1230, he was succeeded by his son Wenceslaus.

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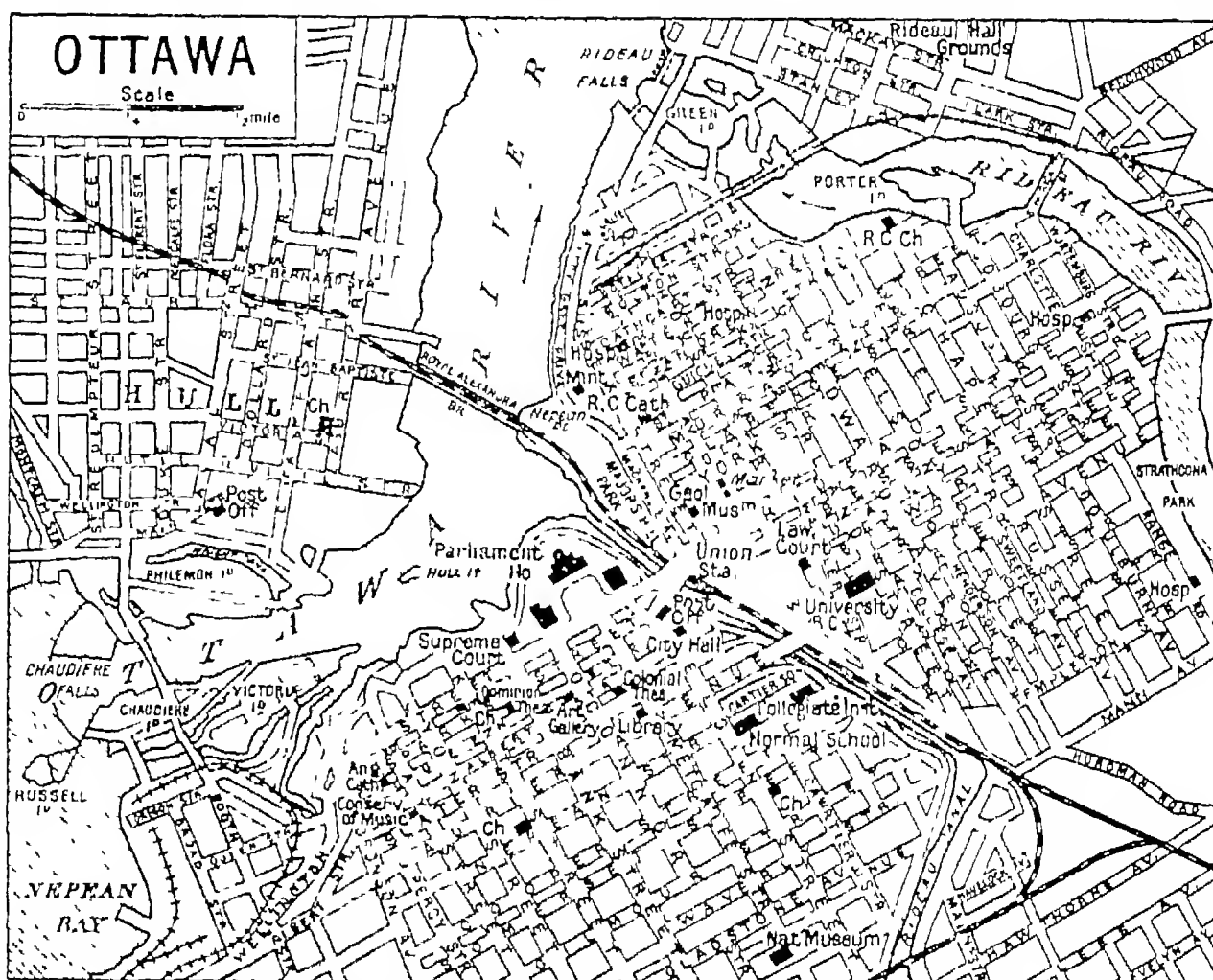
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Ottakar II, a grandson of Ottakar I, began to reign in 1253. He had already made himself duke of Austria, and led a faction against his father. By force of arms he added to Bohemia the duchies of Styria and Carinthia, and in 1273 had a good chance of being chosen German king. Rudolf of Hapsburg, however, was preferred, and war broke out. Ottakar was beaten and compelled to surrender all his lands save Bohemia and Moravia. Trying to recover them, he was killed in battle, Aug. 26, 1278.

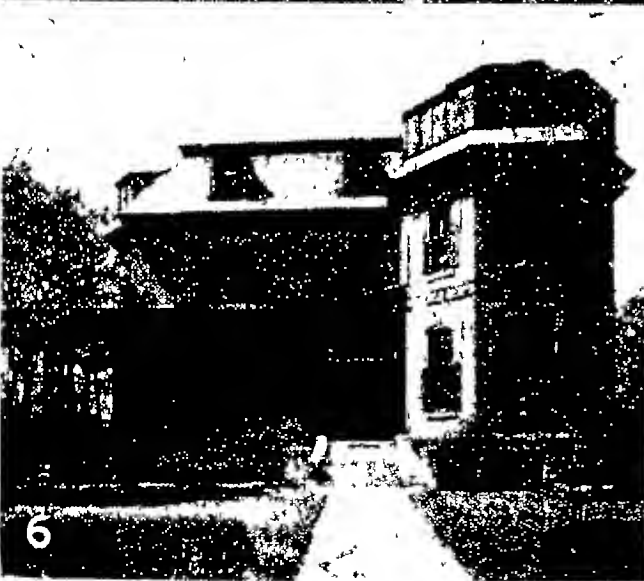
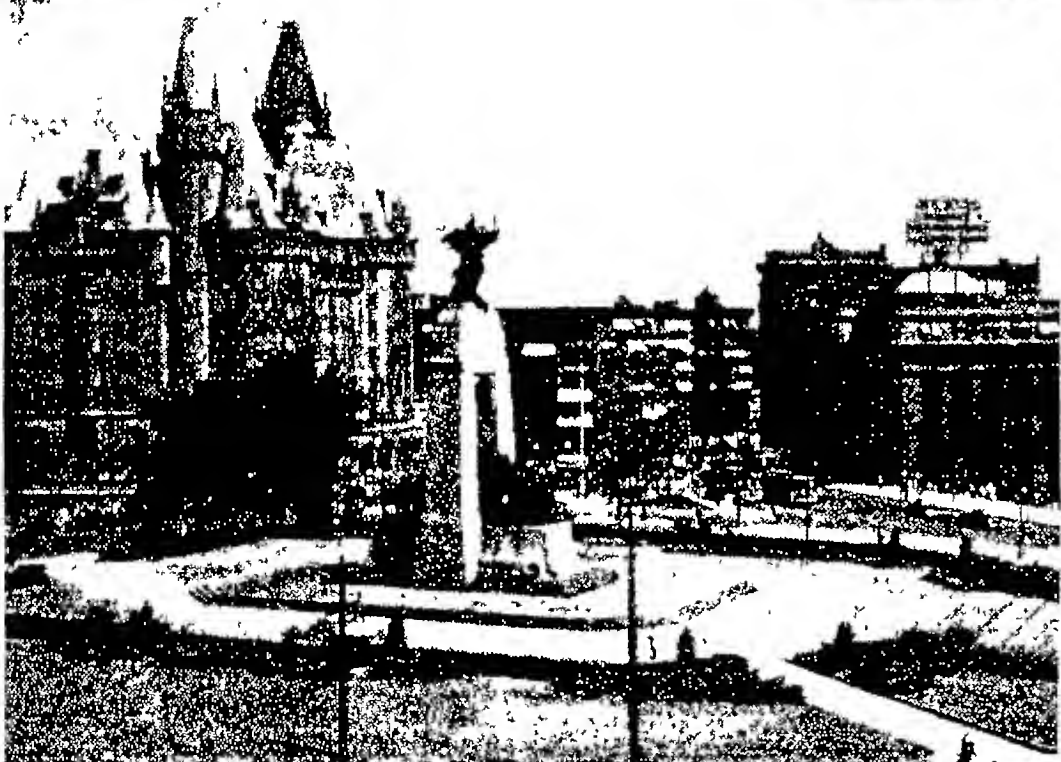
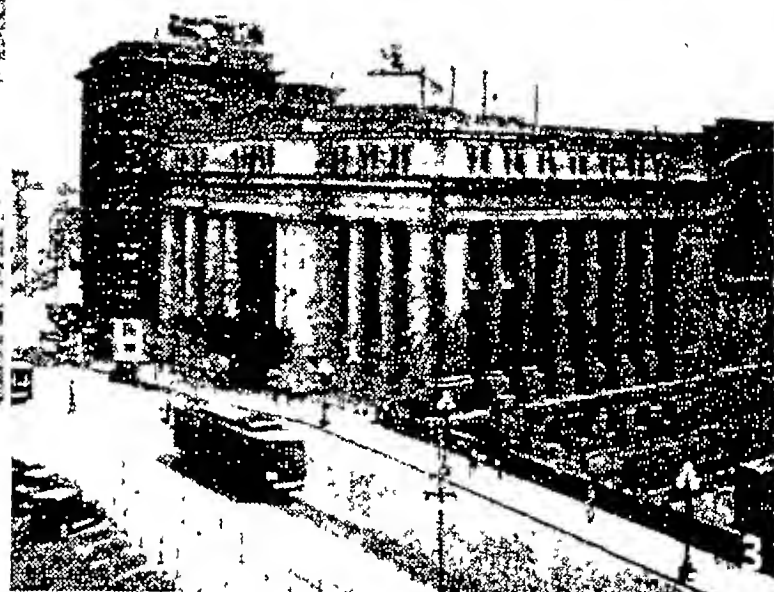
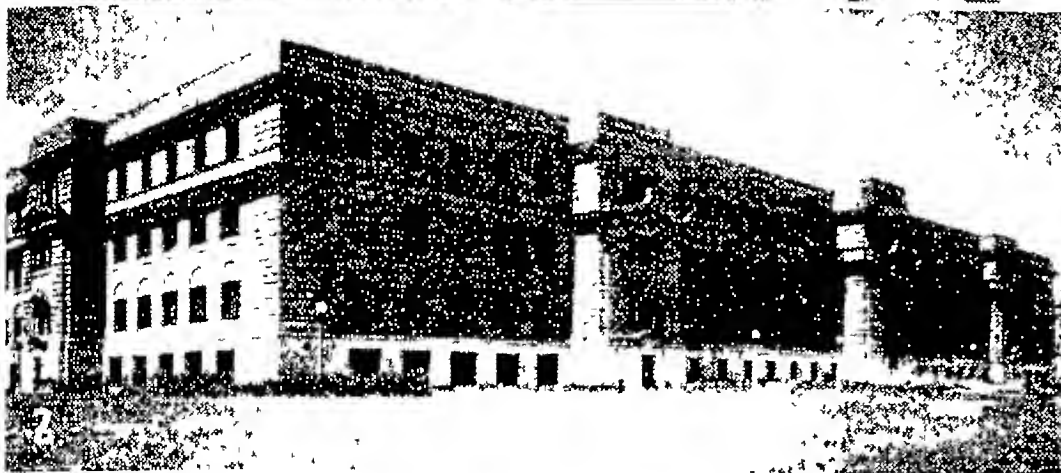
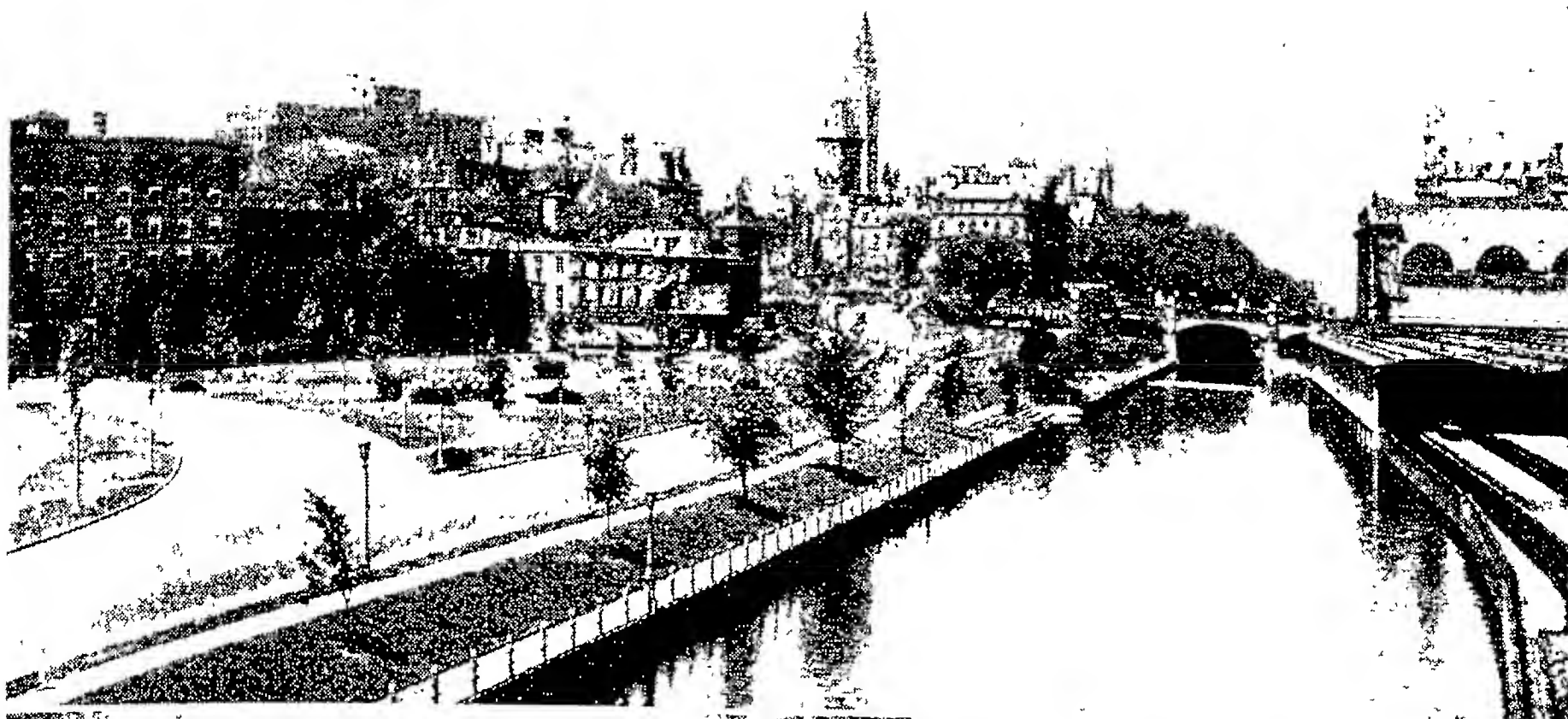
**Ottava Rima.** The standard measure of Italian heroic verse. It is a stanza of eight iambic pentameter lines, the first six of which rhyme alternately, while the last two are a couplet with a third rhyme. Byron's Don Juan is the classic English example.

**Ottawa.** River of Canada, tributary of the St. Lawrence. It rises in the lakes in the W. of the prov. of Quebec, and flows W. to Lake Temiscaming. Turning E., it forms the boundary between Ontario and Quebec, passes the cities of Ottawa and Hull, and joins the St. Lawrence by two branches at Montreal. Its length is 780 m. It is partly navigable, and has been made more so by the construction of short canals. Its several falls, notably the Chaudière and Rideau, supply water power for electricity. The Rideau Canal connects it with Lake Ontario. Its chief tributaries are the Gatineau, Lièvre, Coulange, Madawaska, and Rideau; most of them are lumbering streams.

**Ottawa.** City and capital of Canada. It is in Carleton county, Ontario, at the point where



Ottawa, Canada. Plan of the capital city of the Dominion



1. Rideau canal as it approaches Parliament House, conspicuous by its clock tower, seen centre. 2. The national research building. 3. Union rly. station. 4. Confederation Square, dominated by the national war memorial, commemorating Canadian fallen of the First

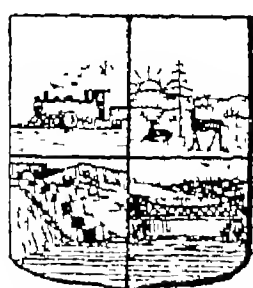
Great War. On left is the Château Laurier, the city's foremost hotel. 5. The Supreme Court, the cornerstone of which was laid by H.M. Queen Elizabeth in 1939. 6. The prime minister's residence, Laurier House. 7. Rideau Street, one of the main shopping centres

# OTTAWA: THE CAPITAL CITY OF THE DOMINION OF CANADA



the Rideau joins the Ottawa, 116 m. W. of Montreal, and is served by C.N.R., C.P.R., and the New York Central rly. Electric lines run through the city and connect it with its suburbs and with Hull on the other side of the Ottawa.

The fine parliament house was burned down in 1916, but was rebuilt. The prominent feature of the new building is its great Tower of Peace, in which is a memorial chamber, commemorating Canada's 60,000 soldiers who gave their lives during the First



Ottawa arms

In 1921 a replica of the chair in the British house of commons was formally presented by Lord Ullswater, ex-Speaker. The national museum, art gallery, observatory, and Rideau Hall, the official residence of the governor-general, are notable buildings. There are R.C. and Anglican cathedrals, many churches and schools, a university (*v.i.*), and fine parks.

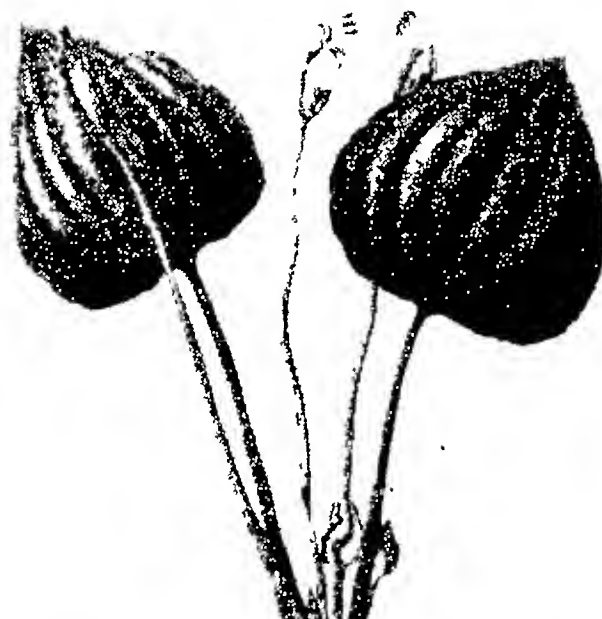
Largely a residential city, Ottawa is also a centre of the lumber industry, and there are manufactures of machinery, flour, paper, etc. The falls near the city provide plentiful water power. The town was founded as a settlement for John By and his men constructing the Rideau canal during 1826-32. and was called Bytown in his honour. In 1854 it was renamed Ottawa, an Indian name. Selected by Queen Victoria as capital of Canada, 1858, it grew in importance after Canada became a dominion, 1867. Pop. (1956) 222,129.

**Ottawa, UNIVERSITY OF.** Canadian educational institution at Ottawa. An R.C. establishment, it is conducted by the Oblate Fathers of Mary Immaculate. It was incorporated in 1849 as the college of Bytown, the old name of Ottawa. In 1861 it became the college of Ottawa, and in 1866 a university. Its chief departments are arts, philosophy, and theology, and it is equipped with museums, laboratories, and a library.

**Ottawa Agreements.** Imperial preference agreements concluded at the Ottawa conference of 1932, and ratified by Great Britain in the Ottawa Agreements Act. The mother country undertook to admit dominion and Indian imports duty-free; maintain the 10 p.c. duty on timber, canned and fresh fish, canned meat, leather, lead, zinc, etc., from foreign sources;

and impose new or increased duties on commodities such as dairy produce, fruit, meat, wheat, and tobacco, in which one or other dominion was specially interested. Dominion and Indian govts. made protective duties on manufactured products, especially iron and steel, from places inside the Empire less than on those from outside it. A clause, avowedly aimed at the U.S.S.R. "dumping" programme, provided that if the preferences were being frustrated by "state action" of any foreign country, steps would be taken to ban the import from that country of the goods concerned. The Anglo-Russian trade agreement was accordingly denounced. The Ottawa agreements were vigorously criticised by free traders as a retrograde step, and led to the resignation from the British govt. of Liberals under Sir Herbert Samuel and of Viscount Snowden. See Imperial Preference.

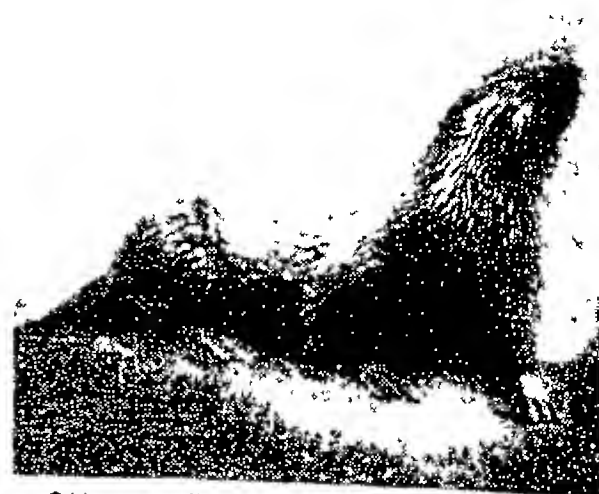
**Ottelia.** Small genus of aquatic perennial herbs of the family Hydrocharidaceae. They are



Ottelia. Flowers and heart-shaped leaves of the aquatic herb

natives of tropical and subtropical regions. They have submerged and floating leaves (the latter heart-shaped) and six-partite flowers. *O. indica* is used as a pot-herb in India.

**Otter** (*Lutra*). Aquatic carnivorous fur-bearing mammal, belonging to the family Mustelidae. Widely distributed, being found in Europe, Asia, and America, it is usually about 2 ft. long in body with a tail 18 ins. long, and is cat-like in general form. It has thick brown fur, of considerable commercial value, especially in the American species. The feet are webbed, and the long flattened tail assists in swimming. Otters are not uncommon in secluded waters of Great Britain; but the havoc they work among the fish, of which they kill more than they need, causes them to be remorse-

Otter. Common British species of the aquatic mammal  
W. S. Berridge, F.Z.S.

lessly persecuted. They live in burrows in the river banks, but frequently descend to the sea, where they feed upon molluscs, crustaceans, and fish.

Otter hunting, which was an organized sport in the time of Henry II, takes place from May to Oct., the only form of hunting carried on during summer in the U.K. It is conducted on foot with otter-hounds (*q.v.*), of which there are many packs in England and Wales, and a few in Scotland.

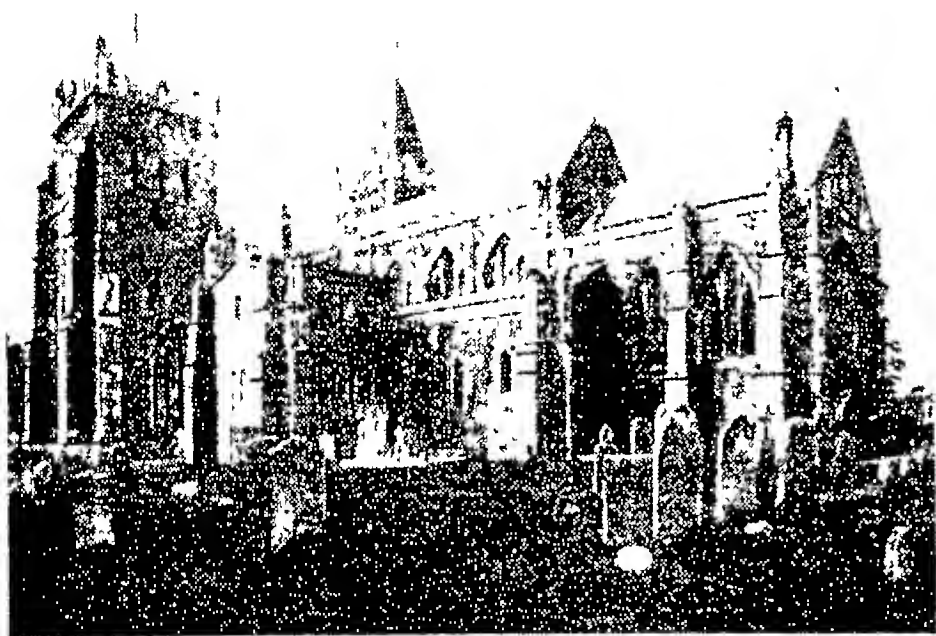
**Otterburn.** Village of Northumberland, England. It is 31 m. N.W. of Newcastle-upon-Tyne, on the Rede, in Redesdale. There is a modern church, S. John the Baptist. Otterburn Tower occupies the site of an ancient one. Pop. 361. The village is famous for the battle fought between the Scots and English, Aug. 19-20, 1388. The invading Scots, under James, earl of Douglas, were retreating N. from Durham and encamped on a hill near Otterburn. They were attacked in moonlight by Sir Henry Percy (Hotspur) and his brother Ralph, both of whom were taken prisoner. Douglas was slain, but the Scots proved victorious. The ballad of Chevy Chase (*q.v.*) describes an otherwise unknown fight, often confused with this.

**Otter Hound.** Breed of dog descended from the old Southern hound of Great Britain. It is described under Hound.



Otter Hound. Champion type of the breed of dog used in otter hunting

**Ottery St. Mary.** Urban dist. and market town of Devon, England. It stands on the Otter, 12 m. E. of Exeter, and is served by rly. A place of great charm, with narrow streets, it is noted for its beautiful church of S. Mary, with two transeptal towers and other features of interest; one of the most magnificent churches in England, it dates from the 13th and 14th centuries. At Chanters House (formerly called Heath's Court) Oliver Cromwell in 1645 convened the people of the neigh-



Ottery St. Mary, Devon. Parish church of S. Mary, with the tower of the south transept on the left

bourhood and called on them for men and money. Near by are Cadhay House and Knightstone Manor, both Elizabethan. Prickly Pear Blossoms Park at West Hill belongs to the National Trust. Bricks are made, mushrooms and bulbs grown, and there are sand-pits and horticultural nurseries. Ottery was the birthplace of Coleridge. The grammar school at which he was educated was pulled down in 1884. Ottery figures in Pendennis as Clavering St. Mary. Market, Monday. Pop. (1951) 4,015.

**Otto I, THE GREAT (912-973).** German king and Roman emperor. He was born Nov. 23, 912, son of Henry the Fowler, whom he succeeded in 936. At first virtually little more than duke of Saxony, he ended by restoring the empire of Charlemagne.

Even in Saxony Otto was confronted by opposition, developed by his brother Henry and his half-brother Thankmar into a formidable conspiracy, in which the dukes of Lorraine and Franconia were also concerned. Having crushed this at Andernach, Otto proceeded to get the great duchies, as far as possible, into the hands of his relatives, with even worse results. His son Ludolf in Bavaria and his son-in-law Conrad in Lorraine organized another great conspiracy, in the course of which

Otto himself was taken prisoner in 952; but by making promises which he at once broke, he gained freedom and finally crushed the rebels at Regensburg. Otto conducted a short and successful war against the king of France about the possession of Lorraine, secured his people from external foes, and made a landmark in medieval history by his great victory over the Magyars on the Lechfeld in 955. Before his death the rulers of Bohemia, Poland, and Denmark all did homage to him. In 951 Ade-

laide, widow of Lothair, king of Lotharingia, called Otto to her aid in Italy, where Berengar, sometimes called king of Italy, did homage to him; but his position there was dubious until a second visit, when he was crowned emperor in Rome by the pope, Feb., 962. He did much for the organization of the Church, giving responsible posts to ecclesiastics. He was twice married, his first wife being Edith (d. 946), daughter of the English king, Edward the Elder, his second Adelaide of Lotharingia. Otto died May 7, 973.

**Otto II (955-983).** German king and Roman emperor. Son of Otto the Great by his second wife Adelaide, he was crowned king when only six, and joint emperor in Rome in 967. In 973, on his father's death, Otto became ruler of Germany and Italy, but his ten years' reign was spent in warfare, by which he lost Lorraine to the French. Otto, who died in Rome, Dec. 7, 983, married Theophano, daughter of the East Roman emperor Romanus II.

**Otto III (980-1002).** German king and Roman emperor. He succeeded his father Otto II at the age of three, and was trained by his Greek mother Theophano to despise the Germans. Crowned by Pope Gregory V, his cousin, in Rome, May 21, 996, Otto endeavoured to revive the ancient conception of the Roman empire. He checked German ascendancy by strengthening the Poles and Hungarians, suppressed the revolt of the Roman Crescentius, whom he put to death 998, and made his tutor Gerbert pope as Sylvester II, 999. He was driven from Rome by the Italians. Died Jan. 23, 1002.

**Otto IV (1174-1218).** German king and Roman emperor. The second son of Henry the Lion, duke of Bavaria and Saxony, and of Matilda of England, after the death of the emperor Henry VI he was elected German king at Cologne, June 9, 1198, by the Guelph party, in opposition to Philip of Swabia. On Philip's murder in 1208 Otto was elected emperor, and crowned in Rome, Oct. 4, 1209, but in the next year was placed under the ban for seizing papal territory, and was deposed by the Hohenstaufen party, who set up Frederick II. Otto was beaten at Bouvines by the French, 1214. He died May 19, 1218.

**Otto I (1848-1916).** King of Bavaria. Born April 27, 1848, second son of Maximilian II, he became king on the death of his elder brother Louis II on June 13, 1886. He had, however, been insane for ten years, and his uncle, Prince Luitpold, acted as regent until his death in 1912, when it was decided to depose the king as incurably insane, in favour of his cousin Louis III. Otto died Oct. 3, 1916.

**Otto I (1815-67).** King of Greece. Born June 1, 1815, the second son of Louis I, king of Bavaria, he was invited, in accordance with the London protocol of May 7, 1832, to accept the throne of liberated Greece, Feb. 6, 1833. In 1836 he dismissed the unpopular Bavarian Armandsparg, who had been chief of the council of regency during his minority. The revolution of Sept., 1843, compelled the king to call a national assembly charged to draw up a constitution, but this step failed to secure a stable government. His difficulties were increased by a brief rupture of relations with Turkey in 1847. Military plots against the monarchy in 1861-62, failed, but on Oct. 21, 1862, an insurrection led to the abdication of Otto, who retired to Bavaria. He died at Bamberg, July 26, 1867.



Otto I, King of Greece

**Otto (b. 1912).** Austrian prince and pretender to the throne of Austria-Hungary. Francis Joseph Otto of the house of Hapsburg-Lorraine became crown prince when his father Charles succeeded to the throne in 1916. When Charles abdicated after the First Great War, Otto accompanied him into Switzerland, and later, after



his father's two unsuccessful attempts to regain the throne, went to Madeira. After Charles died, April 1, 1922, Otto moved to Spain, and later to Belgium. In the Second Great War he went to the U.S.A., but returned to Europe in 1944. Monarchists both in Austria and in Hungary looked on him as their rightful king.

**Otto, NICHOLAS** (1832-1891). A German engineer. Born at Deutz, June 10, 1832, he studied engineering and devoted his energy to developing the internal combustion engine. In 1794 Robert Street, an associate of James Watt, had made a primitive type of gas engine which Otto used as the basis of his own experiments. In 1876 he produced the first engine working on the four-stroke cycle, the fuel used being coal gas. It was first publicly exhibited at the Paris exhibition in 1878. It is generally agreed that Otto's was the first practical engine, and from it have been developed the power units which made possible the motor vehicle and the aeroplane. Otto died Jan. 26, 1891.

**Ottoman.** Kind of couch or divan without back or arms. Of Turkish origin, it became fashionable in England about 1800. One form was a long box with a cushioned lid, another form had a head and foot rest.

**Ottoman.** Name of the dominant Turkish people. It is derived from Osman, who about 1280 became the leader of a tribe living under the protection of the Seljuks. Having won a great reputation as a fighter, he declared himself independent, and is regarded as the founder of the Turkish or Ottoman Empire, for his tribe, called the Ottoman Turks, entered on their career of conquest, and in 1453 planted themselves at Constantinople (Istanbul). *Consult* The Structure of the Ottoman Dynasty, A. D. Alderson, 1956.

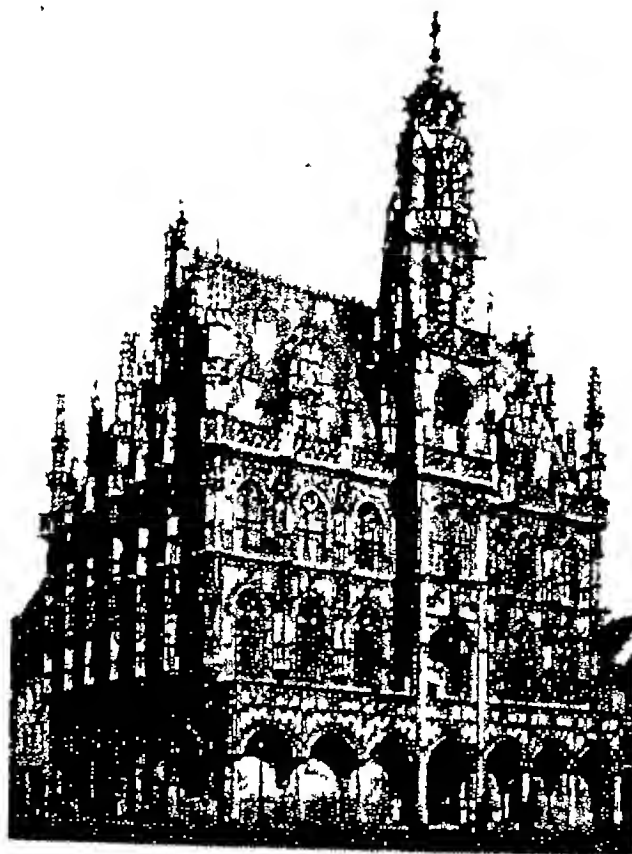
**Otto of Roses** OR ATTAR OF ROSES (Arab. *ytr*, perfume). Essential oil extracted from rose petals by distillation with steam. The oil separates in the receiver. Perfume of roses has always been highly appreciated; there are many references to it in ancient literature and mythology. In early times it appears to have been used mainly in unguents prepared by an extraction of petals with oils or fats; sesame oil was specially valued for this purpose. Rosewater, obtained by distilling the petals with water, was perhaps originally produced in Persia. The value of the essential oil which

rose to the surface does not appear to have been realized until 1600.

Production of otto was established in Bulgaria in 1710 with flowers (*Rosa damascena*) from Asia Minor. By 1750 Bulgaria had become the chief source of supply, and it has maintained its position, though cultivation has extended to France. During 1927-37 Bulgarian annual production was some 10,000,000 kilos of flowers, yielding about 200 kilos of otto, France being the largest buyer. The main rose growing area extends about 100 m. along the southern slopes of the Balkans. The French industry is mainly around Grasse, where the chief species cultivated is *R. centifolia*. In France rosewater is the chief product, whereas in Bulgaria the otto is more important.

The composition of otto of roses is complex, the principal constituent being *l. citronellol*, 45-55 p.c. The odour is subtle and varies according to the flowers used and the methods of extraction. Chemical analysis gives no satisfactory indication of quality; olfactory examination alone supplies the information required by the perfume maker. *Consult* Perfumes, Cosmetics, and Soaps, W. A. Poucher, 1941.

**Ottumwa.** City of Iowa, U.S.A., the co. seat of Wapello co. It stands on both banks of the Des Moines river, 76 m. by rly. W.N.W. of Burlington, and is served by the Chicago, Milwaukee and St. Paul and other rlys. Industries include the manufacture of iron and steel, agricultural implements, wagons, flour, paper, cigars, bricks, and tiles. It has several meat packing houses, and carries on a large trade



Oudenarde, Belgium. The 16th century town hall, on the N. side of the Grande Place

in agricultural produce and coal. Ottumwa was settled in 1843, as the result of a peace treaty with Indians under Chief Ottumwa, who is buried outside the town. It became a city in 1857. Population (1950) 33,631.

**Otway, THOMAS** (1651-85). English dramatist. He was born at Trotton, Sussex, March 3, 1651, and educated at Winchester and Christ Church, Oxford. In 1675 appeared his first play, the tragedy of Alcibiades, which had some success chiefly owing to the fine acting of Mrs. Barry,



Thomas Otway, English dramatist

with whom Otway fell in love. Her cruel treatment of him drove him first into the army and a campaign in Flanders with a cornet's commission, and latterly to a life of degrading dissipation. He died in utter destitution, April 14, 1685. Otway's best-known play is the great tragedy, Venice Preserved, 1682, in which he shows himself a master of pathos and passion. Another fine tragedy is The Orphan, 1680. He also wrote several comedies, of which the most interesting is The Soldier's Fortune, 1679.

**Ouachita.** Alternative spelling of Washita (*q.v.*).

**Oubain** OR G-STROPHANTHIN. Crystalline glycoside obtained from the seeds of *Strophanthus gratus*, a plant which grows in Sierra Leone and the Cameroons. The name oubain was first given to a substance isolated from the wood of *Acocanthera oabaio*. It is more poisonous than strophanthin (*q.v.*).

**Oubliette** (Fr. *oublier*, to forget). Medieval term for a pit or well constructed in the masonry of a castle dungeon, and used for the close confinement of prisoners. Oubliettes were also used for the secret disposal of prisoners' bodies.

**Oudenarde** OR AUDENARDE. Town of Belgium. In the prov. of E. Flanders, it is 10 m. S. by W. of Ghent, and is built on both sides of the Scheldt. Its chief building is the town hall, a beautiful 16th century edifice with a tower in five storeys, reputed the finest hôtel de ville in Belgium after that of Brussels. The chief churches are S. Walburga's and Notre Dame. Pop. approx. 7,000.

**Oudenarde, BATTLE OF.** Fought July 11, 1708, between the British and their allies and the French.

The former had a small garrison in Oudenarde, which was being attacked by a French army under Vendôme. This occupied a position behind the Norken, a tributary of the Scheldt. Marlborough decided to fight at once. He sent an advance body across the Scheldt, and the opening encounters took place just across that river while the rest of the allied force was crossing it.

The allied crossing had not been completed when the duke of Burgundy, who shared the command with Vendôme, ordered his army forward, and in the angle formed by the Scheldt and the Norken the main engagement was fought out, chiefly by the infantry. A French attempt to disorganize the allies before they were in order of battle failed, and the French found themselves half encircled. A turning movement made by some Dutch troops against the French right completed their discomfiture. The left wing withdrew in good order and covered the withdrawal of the rest, and a rout was averted by the oncoming of night. The allied army—British, Hanoverian, Prussian, and Dutch—was perhaps 30,000 strong, and lost about 3,000 killed and wounded. The French, who numbered perhaps 40,000, lost 15,000, including prisoners. See Spanish Succession, War of the.

**Oude Rijn.** River of the Netherlands, a branch of the lower Rhine. At Utrecht the Kromme Rijn divides into the Vecht and the Oude Rijn (Old Rhine), the latter flowing W. through the provs. of Utrecht and S. Holland to the North Sea at Noordwijk.

**Oudh.** E. portion of the former British province, the United Provinces of Agra and Oudh, India. It lay between Nepal and Central India and between Agra and Bihar. Lucknow was the capital. In ancient days a flourishing kingdom, later successively under the sway of the Afghan and Mogul emperors, it became independent about 1732. In 1856 Dalhousie deposed the king of Oudh, whose territory was incorporated in the North-Western provinces. It had an area of 24,071 sq. m., and after the partition of India in 1947 formed part of the Uttar Union.

**Oudinot, CHARLES NICHOLAS** (1767–1847). French soldier. Born at Bar-le-Duc, April 25, 1767, he entered the army in 1784, but soon retired. On the outbreak of the Revolution he rejoined, becoming a general in 1794. As chief of staff to Masséna, he added greatly to his

reputation, was made inspector-general of infantry, and sat in the chamber of deputies. In 1805, in command of his division, the grenadiers, Oudinot had a large share in the victory of Austerlitz; he was also at Friedland, and for his conduct at Wagram Napoleon made him a marshal. Having been governor of Holland, 1810–12, he was in the Russian campaign and at Leipzig, but in 1814 he went over to the Bourbons, to whom he remained faithful during the Hundred Days. In 1823 Oudinot led



Marshal Oudinot, French soldier

an expedition into Spain. He died Sept. 13, 1847. Napoleon made him duke of Reggio, and other honours were given to him by Louis XVIII. Hisson Charles, duke of Reggio (1791–1863), in 1849 was in charge of the French army that took Rome and restored the temporal power of the pope.

**Oudtshoorn.** Town of the Cape Province, S. Africa. It stands on the Grobelaars river, a tributary of the Olifants, 277 m. by rly. W. of Port Elizabeth. The chief buildings are several churches, chamber of commerce, public library, drill hall, hospital, and theatre. Oudtshoorn is the centre of a prosperous agricultural district in which fruit, vegetables, cereals, and tobacco are grown and ostriches and pigs are reared. In the Second Great War there was a school of the Empire air training scheme. To the N., 18 m. away, are the Cango Caves, perhaps the finest stalactite caverns in the world. Pop. approx. 17,000.

**Oughter.** Lough or lake of Eire. In the N. of Cavan, Ulster, it contains a number of small islands. It is fed and drained by the river Erne, and measures 4 m. in length and 3 m. in breadth.

**Ougrée.** Town of Belgium, in the prov. of Liège. It lies on the right bank of the Meuse, 2½ m. S.W. of Liège. It has busy metal and coal industries, and is a centre of the Liège-Seraing industrial area.

**Ouida.** Pen-name of Marie Louise de la Ramée (1839–1908). British novelist. Born Jan. 1, 1839, at Bury St. Edmunds, she was the daughter of Louis Ramé, a teacher of French. She began to write at about 20 under the influence of Harrison Ainsworth, and produced some 40 flamboyant



*Ouida*

novels, including *Strathmore*, 1865; *Under Two Flags*, 1867; *Moths*, 1880; *The Massarenes*, 1897; also short stories and essays of merit.

At one time she enjoyed great popularity, but her vogue diminished, and she died in poverty at Viareggio in Italy, Jan. 25, 1908. Ouida had intellectual gifts and the faculty of telling an interesting story. She was devoted to animals. *Pron.* wee-da. Consult *The Passionate Victorian*, E. Bigland, 1950.

**Ouija** (Fr. *oui*, yes; Ger. *ja*, yes). Apparatus used in occult experiments. It is a board on which the alphabet and various conventional signs are written, and is used for recording automatic messages.

**Oulton.** Village of Suffolk, England. It lies 2 m. W. (inland) from Lowestoft and has a rly. station. S. Michael's church shows remains of Norman work. Borrow lived for many years in the village, which has a pop. of 4,644. Oulton Broad is a stretch of water visited for yachting and angling. The full name of the mun. bor. is Lowestoft and Oulton Broad. Lake Lothing extends between Oulton village and the North Sea.

**Oulu.** Dept. of Finland. It is in the N. and is bounded W. by the gulf of Bothnia, which separates it from Sweden; E. by Russia; and N. by Norway. Area 21,900 sq. m. Pop. (1956) 394,013. The capital town is also called Oulu. Pop. (1956) 40,105.

**Ounce.** Measure of weight. In Great Britain it is the 12th part of a pound troy, and the 16th part of a pound avoirdupois. A fluid ounce is a measure of capacity, and equals one avoirdupois ounce of distilled water at 62° F. The ounce troy contains 480 grains, and the ounce avoirdupois 437½ grains.

**Ounce** OR SNOW LEOPARD (*Felis uncia*). Species of leopard. Found in the mountainous districts of Central Asia, it reaches a length of 7 ft. and differs from the true leopard in its long woolly fur, whitish-grey colour, large spots, and arched skull. It never descends to the plains, and preys upon wild sheep and goats. See Leopard.

**Oundle.** Urban dist. and market town of Northamptonshire, England. On the Nene, 30 m. from Northampton and 13 m. from



Peterborough, it has a rly. station. The chief building is the church of S. Peter, a fine old edifice with a lofty spire and some interesting architectural features. The Talbot Inn was built partly from materials brought from Fotheringhay. Brewing is an industry. There is an agricultural trade. Oundle was a market town before the Norman Conquest, and a place of some importance through the Middle Ages, though it never secured incorporation. Market day, Thurs. Pop. (1951) 2,224.

**Oundle School.** English public school. It was founded under the will of Sir W. Laxton, lord mayor of London, who, dying in 1556, left some property in the city of London to the Grocers' Company for the purpose. It was a country grammar school until the 19th century, when, the estates having greatly increased in value, the Grocers' Company began to enlarge it, and many new buildings were erected from 1883 onwards, and in 1930 it was incorporated by royal charter. Its most famous headmaster (1892-1922) was F.

cates the principles of kindness to animals in the young. The head offices are at Grosvenor Gardens House, London, S.W.1.

**Ourisia.** Small genus of perennial herbs of the family Scrophulariaceae. Natives of S. America and New Zealand, they have large, notched leaves, springing from the rootstock, and long tubular flowers with acutely lobed mouths.

**Our Mutual Friend.** Charles Dickens's thirteenth and last completed novel. It was published in monthly parts (May, 1864-Nov., 1865), with illustrations by Marcus Stone. In its remarkable range of scenes and characters it presents a rich picture of, and implicit commentary upon, English life of the period. It is especially memorable for its London riverside scenes and those of parvenu society. The characters include two of Dickens's most appealing heroines, Bella Wilfer and Lizzie Hexham; the pompous Podsnap; the newly-rich Veneerings; Mr. Boffin, the "golden dustman"; the fortune-hunting Lammles; and a powerful study of repressed passion in the schoolmaster, Bradley Headstone.

**Ouro Preto.** Town of Brazil, in Minas Geraes. It occupies the slopes of a mountain, and wheeled traffic is impossible in its streets. It was founded in 1699 and called Villa Rica from gold mines, which are still worked, as are deposits of

iron and manganese. There are shoe factories and textile mills. It was the capital of the state until superseded in 1897 by Belo Horizonte. It contains a school of mines, and Brazil's oldest theatre. The name means black gold. Pop. (1950) 9,247. See illus. in p. 1389.

**Ourthe.** River of Belgium. Rising E. of Gouvy, it flows through the prov. of Luxembourg, first W. then N., and joins the Meuse near Liège, which was the capital of a French dept. called Ourthe under Napoleon I. The Aisne, Amblève, and Vesdre are tributaries. Its total length is 103 m., and it is navigable for a distance of about 36 m.

**Ouse.** Name of several English rivers. It is a Celtic word meaning water, the same root being in Esk.



*Ourisia.* Foliage and flower spike of the perennial herb

**Ouse.** River of Sussex, England. It rises between Horsham and Cuckfield, and flows mainly S. past Lewes, where it cuts through the S. Downs to the English Channel at Newhaven. It is 30 m. long. Until a great storm in 1570 it entered the sea just W. of Seaford.

**Ouse.** River of Yorkshire, England. It is formed by the Ure and the Swale, which unite near Boroughbridge. Thence, as the Ouse, it flows past York, Selby, and Goole to the Trent, with which it unites at Faxfleet, below Goole, to form the Humber. The length is 60 m., and it is navigable to York, 45 m. from its mouth. Its chief tributaries are the Nidd, Wharfe, Aire, Don, and Derwent. See Humber.

**Ouse, GREAT.** River of England. It rises near Brackley in the S.W. of Northamptonshire and flows, mainly E., through Buckinghamshire, Bedfordshire, Huntingdonshire, Cambridgeshire, and Norfolk to the Wash, 2½ m. below King's Lynn. Its chief tributaries are the Ivel, Cam, Lark, Ouzel, and Little Ouse, and its length is 158 m. It is navigable to Bedford; other places on its banks include Stony Stratford, Huntingdon, and King's Lynn. Two artificial channels, called the old and the new Bedford rivers, cut off a large bend of the Ouse between the E. border of Huntingdon and Downham Market. The last 3 m. of its course is another artificial channel. It is tidal for 16 m. The extensive drainage system is controlled by a board with headquarters at Cambridge. As a result of disastrous flooding in March, 1947, the Great



Oundle School, Northamptonshire. Main buildings of the school governed by the Grocers' Company of London

W. Sanderson (q.v.). There is accommodation for 680 boys in 12 houses. The buildings include chapel, great hall, and library, and there are 100 acres of playing fields, as well as gardens. A new chemistry block was opened in 1958. The foundation also supports the Laxton School.

**Our Dumb Friends' League.** British society for the encouragement of kindness to animals. Founded in 1897, it had, fifty years later, 49 local branches, and maintained an animals' hospital in Belgrave Road, London, S.W.1, and a home for lost dogs in North London. A fund started in 1900 provides 2,000 free dog licences to poor persons. Eight shelters for stray animals are maintained in London. A junior branch incul-

Ouse Catchment Board considerably extended this work.

**Outboard Motor.** Power unit attached to the stern of a small boat. It is generally of the two-stroke type, and is a completely self-contained unit incorporating propeller, rudder, and fuel tank. It is generally of from one to three h.p. See Motor Boat.

**Outer Mongolia.** This independent republic of Asia is described under Mongolia.

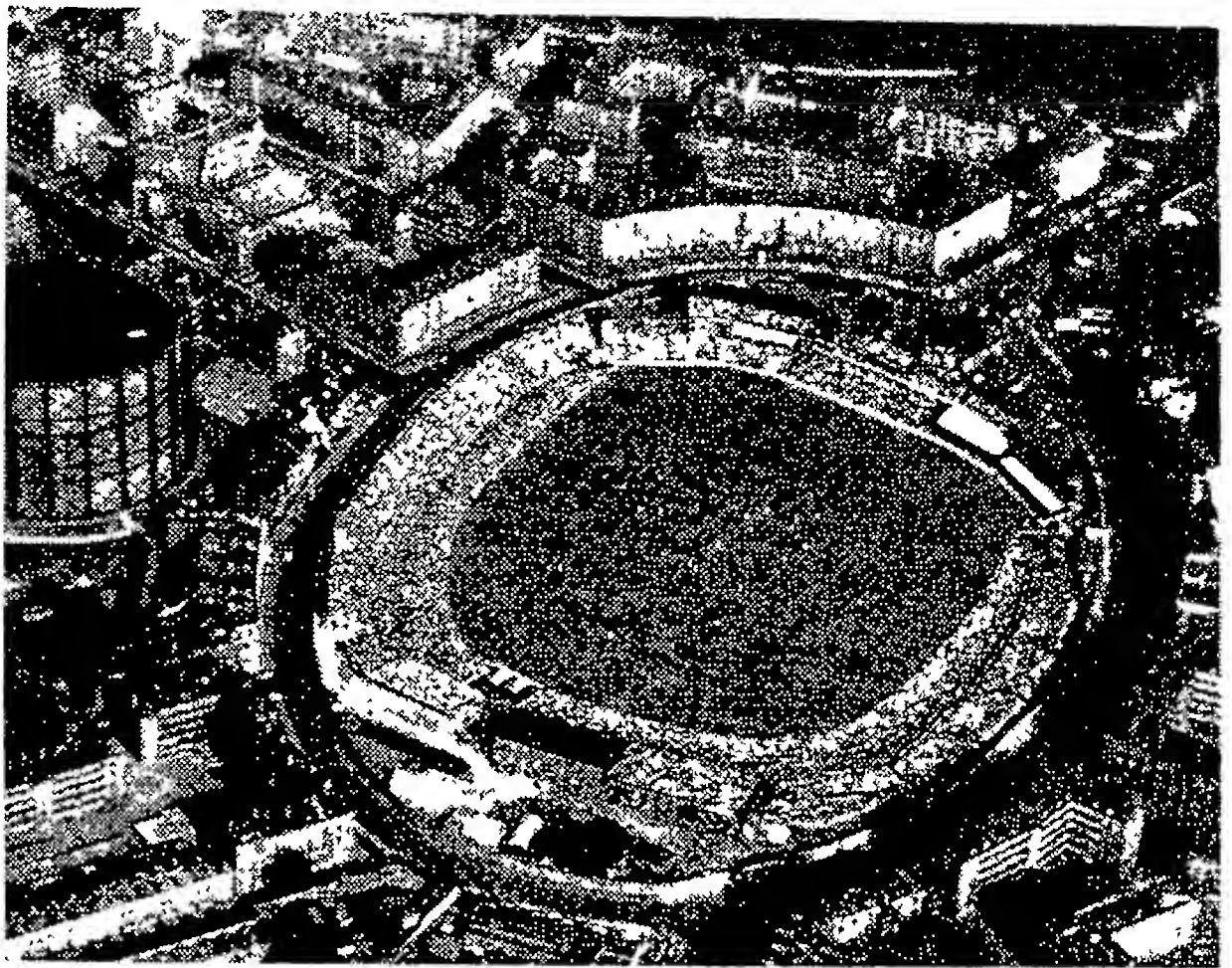
**Outlawry.** Exclusion from the protection of the law. It used to take place when anyone wilfully avoided the execution of process in the king's courts. He was civilly dead, his property was forfeited, and he could acquire no rights. At one time, he could be killed at sight; but the right of slaying outlaws early passed away. Outlawry was abolished in civil proceedings in 1879 and in criminal proceedings in 1938.

**Outline of History, THE.** Book by H. G. Wells, prepared originally with editorial assistance from Ernest Barker, Sir H. H. Johnston, Sir E. Ray Lankester, and Gilbert Murray, and first issued in fortnightly parts, 1919-20. Expressly intended as a corrective to the academic method of teaching history, it emphasised the sweeping perspectives of the story of mankind in a fresh and stimulating way, though both the general view and many of the detailed judgements, expressed and implicit, are strongly coloured by the author's prejudice. The book had an immense sale, and as a result of its success "outlines" of every kind became a popular form of British and American publication throughout the inter-war years.

**Outram, SIR JAMES (1803-63).** British soldier and administrator. Born at Butterley Hall, Derbyshire, Jan. 29, 1803, he joined the East India Company in 1819. He took part in the British campaign in Afghanistan, 1839, was at the capture of Ghazni, and rode in disguise from Kalat to Karachi, over 350 m. In 1843 he defended Hyderabad against a strong force of Baluchis. He was appointed chief commissioner of Oudh, and in 1857 commanded the Persian expedi-



After T. Brigstock



Oval, Kennington. Air view of the Surrey County Cricket Club ground, scene of many test matches

tion. In the Indian Mutiny he joined Havelock on Sept. 15, helped to relieve the residency at Lucknow, and held it until relieved by Sir Colin Campbell. Made lieut.-gen. and a baronet in 1858, he died March 11, 1863, and was buried in Westminster Abbey.

**Outward Bound Trust.** British organization for promoting the training of lads in open air activities. Founded in 1946, it originated in 1941 with the opening of the Outward Bound sea school at Aberdovey, Merionethshire. The Moray sea school was started near Gordonstoun, Scotland, 1948, and a mountain school at Eskdale, Cumberland, 1950. Outward Bound schools give short courses of training in walking, running, climbing, management of small craft, to about 2,000 boys a year. A course for girls was instituted 1951. H.q. of the trust is at 40 Broadway, London, S.W.1.

**Ouzel.** Name for several birds of the thrush family (Turdidae). They are represented in Great Britain by the water ouzel or Dipper (*q.v.*) and the ring ouzel (*Turdus torquatus*), a large moorland black bird, with a white crescent across its breast. It is a migrant, reaching England from Africa in April, and leaving again in autumn. Its nest, eggs, and habits are much like those of the common blackbird.

**Ovaherero.** Alternative name for the Herero (*q.v.*) people.

**Oval, THE.** Ground of the Surrey county cricket club. It is on the W. side of Kennington Park Road, London, S.E., has a tube station on the Northern Line,

and covers about 9 acres of the site of the park of Sir Noel Caron, a Dutch ambassador to England in the 17th century. Opened as a cricket ground, April 16, 1846, it is held on a lease from the duchy of Cornwall. The final test match of any rubber between England and a touring team is played at the Oval, which has given its name to test match grounds in Australia. It was at one time the centre of the old Surrey cycle race meetings. See Kennington.

**Ovambo OR OVAMPO.** Negroid Bantu-speaking people of S.W. Africa and Angola. Inhabiting the fertile Ovamboland steppes N.E. of the Hereros, they are distinguished from this allied people by scantier dress, more peaceable disposition, and agricultural pursuits. Their tribes occupy scattered groups of palisaded homesteads, with granaries and chicken-houses on pile supports. The Ndonga tribe numbers some 65,000, the Kwanyama 55,000.

**Ovamboland OR AMBOLAND.** Country of South-West Africa. Inhabited by the Ovambos, it is situated on both sides of the boundary, between Angola and the South-West Africa territory, mainly in the latter. The native pop. is estimated at 150,000, and the area is about 16,000 sq. m. The country is arid, with no running streams except the Cunene in the extreme N. Many natives own cattle. Before the British occupation in 1915 the only Europeans in the country were Finnish and Rhenish workers with the missionary societies, the Germans in 1906 closing the country to



travellers and settlers. See South-West Africa.

**Ovar.** A town of Portugal, in Aveiro dist., near the N. end of the lagoon of Aveiro, 21 m. S. of Oporto, and 15 m. N. of Aveiro. It has fisheries, and trades in timber, onions, wine, cereals, and vegetables. Pop. (1950) 33,348.

**Ovary.** Gland in the female. It produces the microscopic ova or cells, which, after fertilisation by the spermatozoon, develop into new individuals. Its substance also secretes at puberty those chemicals which give rise to secondary female characteristics, physical and psychic. The ovaries are two in number, and are situated in the pelvis, one on each side of the uterus. Each gland is oval in shape, and in the human being about  $1\frac{1}{4}$  ins. in length.

The ovary consists of fibrous tissue crowded with rounded cells and vesicles called Graafian follicles. A follicle enlarges and ultimately bursts, thus releasing a ripe ovum. This process is known as ovulation, and occurs about every four weeks in the adult. The ovum, after being set free, enters the Fallopian tube, where fertilisation, if it occurs, takes place. If the ovum is not fertilised, the lining of the uterus prepared for its reception peels off and passes into the menstrual flow. Removal of the ovaries (ovariotomy) after puberty leads to cessation of menstruation and to atrophy of the uterus and breasts, with loss of interest in the sexual life. Ovaritis or oöphoritis is inflammation of the ovary.

In botany, the ovary is the base of the pistil, containing the carpel or carpels, in which are the ovules or rudimentary seeds. See Flower.

**Ovation** (Lat. *ovare*, to rejoice). In ancient Rome, a minor celebration of victory accorded to a successful general who was not considered worthy of a full triumph. See Triumph.

**Oven.** Chamber made of brick, stone, or iron, and heated either from without or within, so that articles can be baked. When it is part of a coal-fired kitchen range the heat is external, the fire being to one side, and the other sides surrounded with flues through which the heat passes. Internal heating is afforded in a gas oven by rows of gas jets; in an electric oven by elements or by electronic means; in a brick oven by a fire burnt until the heat is sufficient, when the ashes are withdrawn, the food inserted, and the door closed. Ovens are used in making

pottery, in metallurgy, and chemical operations. See Furnace; Kiln.

**Oven Bird.** Popular name for the genus *Furnarius* of S. American birds, resembling tree-creepers, of which there are some 20 species. The name is derived from the oven-like nest constructed by some of the species. In the U.S.A. the golden-crowned water-thrush, *Seiurus aurocapillus*, a kind of wood-warbler, is called oven bird.

**Over.** At cricket, a group of consecutive deliveries by one bowler from one end of the pitch. In early days there were four balls to the over; from 1889, five; from 1900, six, except that in 1939 the eight-ball over was tried experimentally. In Australian cricket there were six balls to the over from 1887 and eight from 1918. No bowler may deliver two overs in succession in the same innings.

**Over.** Locality in Cheshire, England, part of the urban dist. of Winsford. It stands on the Weaver, 4 m. W. of Middlewich, with a rly. station, Winsford and Over. It has a salt industry, and sheep and cattle fairs. S. Chad's is a 16th-century church.

**Overbeck, JOHANN FRIEDRICH** (1789-1869). German artist. He was born at Lübeck, July 4, 1789, and received his early education in art at the academy of Vienna, which he entered in 1806. In 1810, however, he was expelled and went to Rome, where he joined the R.C. Church, although a descendant of a long line of Protestant pastors. He became the leader of a school of painters known as the Nazarenes, who held that the life of the artist, like his work, must be simple. Overbeck lived in an old monastery on the Pincio, and, because of his religious views, refused to work from the living model. He died at Rome, Nov. 12, 1869. Consult Lives, H. Atkinson, 1882; W. Howitt, 1886.

**Overbury, SIR THOMAS** (1581-1613). English poet and essayist. Born at Compton Scorpion, Warwick, and educated at Oxford and the Middle Temple, his works include the poem *A Wife, Characters or Witty Descriptions of the Properties of Sundry Persons* (his best work), and



Sir T. Overbury,  
English poet  
After N. Whittock

*Crumms Fal'n from King James's Table*, which were edited by E. F. Rimbault, 1856. He was an asso-

ciate of Robert Carr (later earl of Somerset), for opposing whose marriage with the countess of Essex he was imprisoned and poisoned, Sept. 15, 1613. See Somerset, Earl of.

**Overdraft.** Borrowing from a bank, by drawing in excess of the credit balance of a current account within a specified limit. An account having an overdraft limit may fluctuate from being in credit to the highest debit balance permitted, and is thus a favourite method of borrowing by traders and others who can use any funds which they may have in hand for even the shortest time to reduce the interest cost of their borrowing, interest in such cases being calculated on a day-to-day basis.

**Overheads.** Term used in business and by accountants to denote expenses that pertain rather to the business as a whole than to any single transaction or part of the production, e.g. rent, rates, fire insurance, lighting, heating, postage, stationery. It does not, however, apply to the cost of goods or materials or the wages paid to workmen for manufacturing them into saleable goods. An important problem of cost accounting is to devise methods by which allowance can be made for overhead expenses when estimating the total cost of producing goods or carrying out work.

**Overijssel.** Alternative spelling of the Dutch prov. entered under Overijssel in this work.

**Overland Route.** Popular term for the quickest surface route between the U.K. and India. It runs overland through Paris, Lyons, the Mt. Cenis tunnel, Modena, and Brindisi; thence by steamer to Port Said, through the Suez Canal and Red Sea to Bombay. The average time taken is 20 days.

**Overload.** In electrical engineering, the amount of load or work imposed on an electric generator or motor over and above that which it was designed to carry or to perform economically. The effect of an overload on an electric motor is to reduce speed, lessen the counter electromotive force, and, by permitting an undue quantity of current to pass through the windings, to overheat them and possibly destroy their insulation.

**Overlord, OPERATION.** Code name given to the invasion of the Continent by Allied forces, June 6, 1944. See D-day; Europe, Liberation of Western.

**Overlying.** Suffocation of an infant by pressure against the mother or other person while in

bed. The infant mortality from this cause has greatly declined in the 20th century. Under the Children and Young Persons Act, 1933, where a child under 3 has died while in bed with some person over 16, it is presumed that that person has been guilty of the offence of neglecting the child if he or she was under the influence of drink when he or she went to bed.

**Overreach**, SIR GILES. Character in Massinger's play, *A New Way to Pay Old Debts*, 1625-26. An upstart, envious of the caste from which his birth excludes him, he seeks to marry his daughter to a nobleman and so triumph over those whom he has ruined financially by his intended victims, but who still rebuff him. Overreached, he loses his reason. His prototype has been found in Sir Giles Mompesson (1584-1651), a contemporary of the playwright's.

**Over-Seas League**. Organization founded in London by Sir Evelyn Wrench in 1910. In 1957 it had a membership of 52,000. Its aims were to arouse interest in British Commonwealth affairs and problems; to provide places all over the world where British subjects could meet; and to promote migration within the Commonwealth. World h.q.: Over-Seas House, Park Place, St. James's Street, London, S.W.1.

**Overseer**. This term was specifically applied to the unpaid officials formerly appointed each year in every parish in England and Wales to make provision for its poor. Their office was instituted in 1601. Appointments were made from a list of householders resident in the parish. Their duties included the making and levying of poor-rates, and the preparation of valuation, voters', and jury lists. In 1927 their powers and duties were transferred to the town councils or other rating authorities.

**Oversoul**. A term used by R. W. Emerson to express the idea of God as the supreme spirit which animates the universe. He compares the oversoul to the atmosphere which embraces the earth in its bosom; it is the absolute unity, in which each man's particular being is contained and made one with all the others.

**Overton**, ROBERT (1609-1668). English soldier. Son of an E. Riding landowner, he fought in the civil war on the parliamentary side, was made governor of Hull, later of Edinburgh, and helped in the sub-

jugation of Scotland. Later his ambiguous attitude led to a life of almost constant imprisonment, first by Cromwell, then, after the Restoration, as a suspected fifth monarchy man. Milton described his exploits in *Defensio Secundo*.

**Overtone**s. In a vibrating system the lowest frequency of response is termed its fundamental. Integral multiples of this frequency are known as overtones or harmonics.

**Overture**. Musical composition for instruments, intended originally as an introduction or opening of an opera, suite, oratorio, or play.

Handel modelled his overtures on Lully's, Bach based his concertos on the Scarlatti overture. Later, with the growth of sonata form, the overture developed on similar lines, and many of the opera overtures of Mozart, Beethoven, Weber, and the early Wagner are symphonic or sonata movements, some of them foreshadowing the works which they preceded either by employing the same themes, or merely by inducing an atmosphere. Concert overtures are on similar lines, but independent of any opera or play, such as Mendelssohn's *Fingal's Cave* and Schumann's *Bride of Messina*.

**Overijssel**, OR OVERIJSEL. Province of the Netherlands. With an area of 1,300 sq. m., it adjoins the provs. of Friesland, Drenthe, and Gelderland, its W. frontier being that of Germany, its E. being the Yssel Meer. It consists mostly of flat marshy country, with moors, fens, and woods. Sheep and cattle are reared; dairy produce is important. Chief rivers are the Yssel, Vecht, and Regge. Zwolle is the capital. Pop. (1955 est.) 728,000.

**Ovid** (43 B.C.-A.D. 17). Roman poet, whose full name was Publius Ovidius Naso. He was born on March 20, 43 B.C., at Sulmo (mod. Sulmona), in the country of the Paeligni. As he was intended for the legal profession, his father took him to Rome, where he studied under the most famous rhetoricians of the day. He showed great promise as a lawyer, and held some minor official positions, but he felt that poetry was his profession. At the age of 27 he wrote the tragedy of *Medea*, unfortunately lost, of which Quintilian speaks in the highest terms. With an increasing reputation and enjoying the favour of Augustus, in A.D. 9 he was suddenly "relegated" (see *Exile*) to Tomi, now Constanta, on the Euxine. The reason has never been explained. He himself attributes it to one of

his poems (probably *The Art of Love*) and to an indiscretion. Unable to obtain remission of his sentence, he died at Tomi.

His extant poems, all except the *Metamorphoses* written in hexameters, fall into three classes:

(1) *Erotic*. These include *Heroides*, a collection of fictitious love-letters, written by the heroines of legends to their lovers or husbands; *Amores*, the varied experiences of a lover, written round an entirely imaginary Corinna; *Medicamina Faciei*, *Cosmetics* or the *Art of Making-up*, an account of various toilet devices; *Ars Amatoria*, the *Art of Love*, with instructions for gaining and retaining the affections of a lover or mistress; *Remedia Amoris*, *Remedies for Love*, apparently a kind of recantation of the *Art*.

(2) *Mythological*. These are: *Metamorphoses*, his most famous work, an account of all the myths involving changes of form from the beginning of the world to the transformation of Caesar into a star; *Fasti*, a poetical calendar, giving an account of the heavenly phenomena, the Roman festivals, and their origin; originally intended to be in 12 books, corresponding to the number of months in the year, it was interrupted by Ovid's banishment, only six books, published after his death, being completed.

(3) *Poems of Exile*: *Tristia*, *Lamentations*, and *Epistolae ex Ponto*, *Letters from Pontus*, in which he bewails his lot, and endeavours, by somewhat undignified appeals, to induce the emperor to allow him to return.

**Bibliography**. Works, 9 vols., 1821; 5 vols., 1825; Eng. trans. H. T. Riley, 1851-52; Ovid, A. J. Church, 1880; *Post Augustan Poetry*, H. E. Butler, 1909; *The Art of Love*, trans. into English verse, B. P. Moore, 1935; selected works of Ovid, ed. J. C. and M. J. Thornton, 1939.

**Oviedo**. Maritime prov. of Spain. It corresponds with the ancient Asturias, which was its official name until 1833 and is still often used, and it occupies the N. slopes of the Central Cantabrian Mts. as far as the Bay of Biscay. The Narcea, Nalon, and Navia drain the slopes and provide water-power for the local industries, textiles, and glass-making. In the Nalon valley is the best coalfield in Spain. The mountainous S. impedes communications; the road and rly. to Madrid traverse the Pajares Pass, the other rly. skirts the coast and connects the ports of Gijón and



Over-Seas  
League  
badge



Aviles with Santander. Sugar-beet is a valuable crop. Area, 4,206 sq. m. Pop. (1950) 888,149.

**Oviedo.** City of Spain, capital of the prov. of the same name. Situated on the edge of a fertile



Oviedo, Spain. Church of S. Miguel de Lino, now a national monument

plain where sugar-beet is extensively cultivated, it has national ordnance factories and manufactures of textiles, leather goods, chocolate, and matches. The cathedral, rebuilt 1388-1528, was one of the finest in Spain; it was severely damaged 1936. The church of S. Miguel de Lino or Lillo, built by Ramiro I in the 9th century, is a cruciform building and noteworthy for its carving. The university dates from 1604. During the Spanish Civil War the city was captured by Franco's troops, July 24, 1936, but resistance by Asturian miners went on. Pop (1950) 106,002.

**Oviparous** (Lat. *ovum*, egg; *parere*, to produce). Obsolescent term applied to those animals that deposit their eggs so that embryonic development takes place outside the mother's body.

**Ovule.** Botanical term, applied to the structure which normally after fertilisation becomes the seed. The outer part of an ovule consists of integuments which become the seed coat or coats, and in which an aperture, the micropyle, forms a channel for the entry of the pollen tube. At pollination time the micropyles of gymnosperm ovules are exposed so that pollen can alight on them. Angiosperm ovules are enclosed in ovaries so that the pollen tube must grow through the stigma and into the ovary to reach them. Within the integument(s) there is a nucellus (*q.v.*) enclosing during early stages of ovule development a cell which is haploid in contrast to the diploid structures around it. This cell in most gymnosperms grows into a female prothallus,

near the micropylar end of which several reduced archegonia, each with one egg cell, arise. In angiosperms the female gametophyte is the embryo sac.

**Owari** or BISHU. Prov. of Japan, in Honshu. It is bounded S. by Ise Bay on the E. coast. It consists almost entirely of a fertile plain, the chief area in Japan for the production of rice, wheat, and barley. Horseradish has been dried and exported in large quantities. Poultry rearing is an important occupation. The local clay gave rise to the ceramic industry, which began at Seto village in 1297. Nagoya is the chief town.

**Owen, JOHN** (1616-83). English Puritan. He was born at Stadhampton, Oxfordshire, educated at Oxford, and became an Independent minister, going as chaplain with Cromwell to Ireland in 1649. Two years later he was appointed dean of Christ Church, Oxford, and in 1652 vice-chancellor of the university. At the Restoration he was expelled from office; but Charles II allowed him to minister to an Independent congregation in Leadenhall Street, London. He died Aug. 24, 1683.

**Owen, SIR RICHARD** (1804-92). British scientist. Born at Lancaster, July 20, 1804, and educated



Sir Richard Owen, British scientist

at Edinburgh, he entered the museum of the Royal College of Surgeons, London, 1826. Ultimately he became its curator, a post he held until 1856, when he was appointed superintendent of the natural history department of the British Museum. In 1836 he had been selected for the first Hunterian professorship of comparative anatomy. He is regarded as the greatest anatomist in the history of the science. He was made a K.C.B. 1884, and died Dec. 18, 1892.

**Owen, ROBERT** (1771-1858). British social reformer. Born at Newtown, Montgomeryshire, May 14, 1771, at 19 he was managing a cotton mill with 500 hands. In 1800 he became manager of and partner in the New Lanark Mills, and put into practice on a large scale the ideas which he had already imported into the management of workpeople. His main principle was that the best work can only be expected from happy,

prosperous, and educated employees. With the aid of Jeremy Bentham, he converted his business into a philanthropic trust for his workpeople, the capital being allowed a fixed remuneration of five p.c. The colonies established by Owen—at Orbiston, in Lanarkshire, and at New Harmony, Indiana, U.S.A.—were unsuccessful and involved him in heavy financial losses. By 1828 he had completely severed his connexion with New Lanark, and devoted the rest of his life to the exposition of his socialistic theories. He died Nov. 17, 1858. His works include *A New View of Society*, *A New Moral World*, and an *Autobiography*. See *Co-Partnership*; *Socialism*; consult *Lives*, L. Jones, 1890; F. Podmore, 1906; G. D. H. Cole, 1930.

**Owen, WILFRED** (1893-1918). British poet. Born at Plas Wilmot, Oswestry, Mar. 18, 1893, he was by some critics considered the most promising of the young poets of his day. He served throughout the First Great War in the infantry on the western front, being killed Nov. 4, 1918, one week before the armistice. Editions of his works were published in 1920 and 1931. The MSS. of his poems, the most significant of which expressed a passionate lyrical protest against the horrors of the war, and showed how much he owed to the influence of Keats, were presented to the British Museum in 1934.

**Owen Falls Dam.** Hydroelectric works harnessing the waters of the White Nile, near its source in Lake Victoria, Uganda. The four-fold cataract of Owen Falls, 65 ft deep, is 2½ m. downstream from the point at which the river left the lake, and is close to the town of Jinja. The scheme was first envisaged in 1935, and a report was made to the Uganda govt. in 1947. The consent of Egypt having been obtained, work was begun in 1949. The dam was completed and four of the 10 intended turbines were installed by the beginning of 1956; the full equipment, to be installed by 1960, would raise output to 150,000 kW. The project was intended to hasten the industrialisation of Uganda and to benefit Egypt by giving control of some of the flood waters upon which her agriculture depends. The raising of the level of Lake Victoria meant the disappearance of Ripon Falls (destroyed by blasting) by which the river previously left the lake. The cost was estimated at £12 million, of which £4 million was to be contributed by Egypt.

**Owens, JOHN** (1790 - 1846). British merchant. He was born in Manchester, where he amassed a large fortune, the residue of which, amounting to £96,000, he left in trust for the foundation of a college, with the proviso that no theological tests should be required. Owens College was accordingly founded and opened in 1851. See Manchester University.



**John Owens.**  
British merchant  
From a medallion by  
G. T. Woolner, R.A.

College was accordingly founded and opened in 1851. See Manchester University.

**Owensboro.** City of Kentucky, U.S.A., the co. seat of Daviess co. It stands on the Ohio, 115 m. by rly. S.W. of Louisville, and is served by Louisville and Nashville and other rlys. A considerable river trade is carried on, chiefly in tobacco, the processing of which is the city's main industry. Other industries are the manufacture of carriages and wagons, timber products, electric bulbs, and radio valves. Oil is obtained in the neighbourhood, and cattle-rearing is an important feature of the surrounding countryside. Owensboro was settled in 1797 and chartered as a city in 1866. Population (1950) 33,651.

**Owen Sound.** Town and port of Ontario, Canada. On Owen Sound where the Sydenham river falls into Georgian Bay, and 110 m. from Toronto, it is served by the C.N. rlys. and the C.P.R., and is a port for steamers to the Great Lakes and the St. Lawrence. Population (1951) 16,423.

**Owl.** Order of nocturnal birds of prey (*Strigiformes*). They are externally distinguished by their large heads and the radiated ruffs of feathers around the large eyes. Owing to their loose, outstanding plumage, most owls look much larger than they really are. They are noted for their silent flight and their keenness of vision at night. They feed mainly on small rodents. Twelve British species are known.

The barn owl (*Tyto alba*) is the best known in the U.K. and is common nearly everywhere except in the towns. Its plumage is tawny yellow above, with white face and under parts. In its nocturnal hunting it never wanders far from its abode, often a church tower or hollow tree. It utters a strident and discordant scream, from which it is sometimes known as the screech-owl. The long-eared

owl (*Asio otus*) is about the same size, but darker, with erect tufts of feathers above the eyes. It is gregarious, lives in dense pine woods, varies its diet of small birds with insects, and generally breeds in the deserted nest of a crow or magpie.

The short-eared owl (*Asio flammeus*) is yellowish brown, with a buff face and short tufts of dark feathers on the head. It has a smaller head and is less owl-like in appearance than the other species. A migratory bird, it visits Great Britain chiefly in winter, breeding in the N. of England and in Scotland, where it nests on the ground on moors. It is not strictly nocturnal, and feeds upon rodents and small birds.

The tawny owl (*Strix aluco*), often called the brown or wood owl, is larger in size, with reddish brown plumage above, and reddish white barred with brown below, and is not uncommon in most wooded districts of England and Scotland, but is not native in Ireland. This is the species that utters

the well-known hooting cry. It makes its home in hollow trees. The snowy owl, the European hawk-owl, the American hawk-owl, etc., are only occa-



**Owl.** 1. Long-eared (*Asio otus*).  
2. Short-eared (*Asio flammeus*)  
W. S. Berridge, F.Z.S.

sional visitants to Great Britain. See Eggs colour plate; Feather.

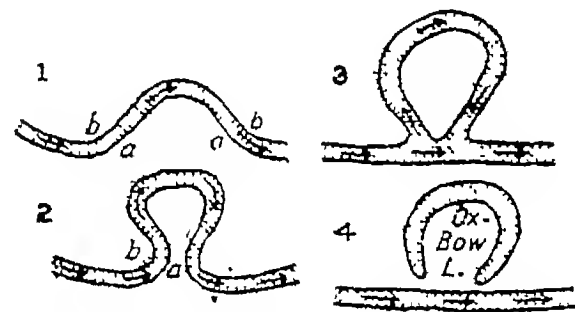
**Owyhee.** River of Oregon, U.S.A. Its headstreams rise in Nevada and Idaho, and after their junction the river flows in a general N. direction to the river Snake. Its length is 370 m.

**Ox.** Word of Anglo-Saxon origin, used for the male of the different species of the Bovidae. Oxen is one of the few existing forms of the old plural *en*. From

the Middle Ages the ox has been extensively used for ploughing and hauling. See Bovidae; Cattle.

**Oxalic Acid** ( $H_2C_2O_4 \cdot 2H_2O$ ). A solid organic acid first prepared from wood sorrel (*Oxalis acetosella*), in which plant it occurs as the acid potassium oxalate. The acid is made on the commercial scale by Dale's process, which consists in fusing sawdust from soft woods, with a mixture of caustic potash and soda, or by heating sodium formate, made synthetically from caustic soda and carbon monoxide. The acid is largely used in calico printing and dyeing, and in the preparation of formic acid and synthetic dyes. It bleaches straw and flax, and cleans brass and other metals.

**Ox-Bow.** Name of a kind of lake. In their flood-plain courses, rivers meander to such an extent



**Ox-Bow.** Diagram illustrating how a meandering river may (1) increase its meander (2) cut through the loop as in 3, and eventually flow straight, forming an ox-bow lake (4)

that great loops are formed. Eventually the river cuts through the neck of the loop and straightens itself, leaving a horseshoe-shaped backwater, which becomes a cut-off or ox-bow lake when the deposition of silt blocks up the ends. Ox-bow lakes may reach 5 m. in diam. in the lower valleys of such rivers as the Mississippi. See Lake.

**Oxenham, JOHN.** Pseudonym of a British writer. W. A. Dunkerley (d. 1941) was educated at Old Trafford school and Victoria university, Manchester. He abandoned a commercial career for writing, publishing in 1898 *God's Prisoner*, a novel. His verse, in style a reflection of Whitman and Carpenter, in sentiment religious and idealistic, enjoyed a vogue during the First Great War; his *Hymn for the Men at the Front* was reputed to have sold 8,000,000 copies. His popular works included *Bees in Amber*; *A Little Te Deum*; *Christ and the Third Wise Man*, 1934; *Wide Horizons*, 1940. He died Jan. 23, 1941. Consult *Scrapbooks of John Oxenham*, E. Oxenham, 1946.

**Oxenstierna** OR OXENSTJERNA. Name of Swedish family, frequently referred to as Oxenstiern. The



most distinguished member was Axel (*v.i.*), but others were Bengt Gabriellsson (1623-1702), who defended Thorn against the Poles, was chancellor under Charles XI, and represented Sweden at the congress of Nijmegen; and Gabriel Thureson (1641-1707), ambassador at the congress of Ryswick, who lost influence by his conversion to Catholicism. John Gabriel (1750-1818) was a poet and a scholar.

**Oxenstierna** OR OXENSTJERNA, AXEL GUSTAFSSON, COUNT (1583-1654). Swedish statesman. Born at Fanö, June 16, 1583, he studied theology in Germany, served Charles IX in diplomatic missions, and became chancellor under Gustavus Adolphus, 1611. He accompanied the king on the Russian campaigns, negotiated the treaty of Stolbova, 1617, and was governor-general of Prussia during the Swedish occupation. He opposed Swedish participation in the Thirty Years' War, but ably supported his king in Germany, acted as regent after his death, 1632, and became

a pivot of the Protestant alliance throughout the struggle. He negotiated the Danish treaty in 1645, and unsuccessfully opposed the abdication of Christina of Sweden. He died Aug. 28, 1654. See Sweden: History; Thirty Years' War.

**Ox-eye Daisy** (*Chrysanthemum leucanthemum*).



Ox-eye Daisy or Dog Daisy

Dog-daisy, perennial herb of the family Compositae. A native of Europe and N. and W. Asia. It has spoon-shaped, deeply cut leaves, and daisy-like flower-heads, 2 ins. across. The rays are pure white, the disk-florets yellow. This is a common weed of meadows and pastures in the U.K.

**Oxford.** City, co. bor., and co. town of Oxfordshire, England; also co. of itself. On the Isis (upper Thames), which sweeps round the W. and S. of the city, and is here joined by the Cherwell, it is

63 m. by rly. and 54 m. by road W.N.W. of London. At Carfax, the centre of the old city, four streets meet: High Street, one of the most picturesque thoroughfares in Europe. Corn market, Queen Street, and St. Aldate's.



Oxford arms

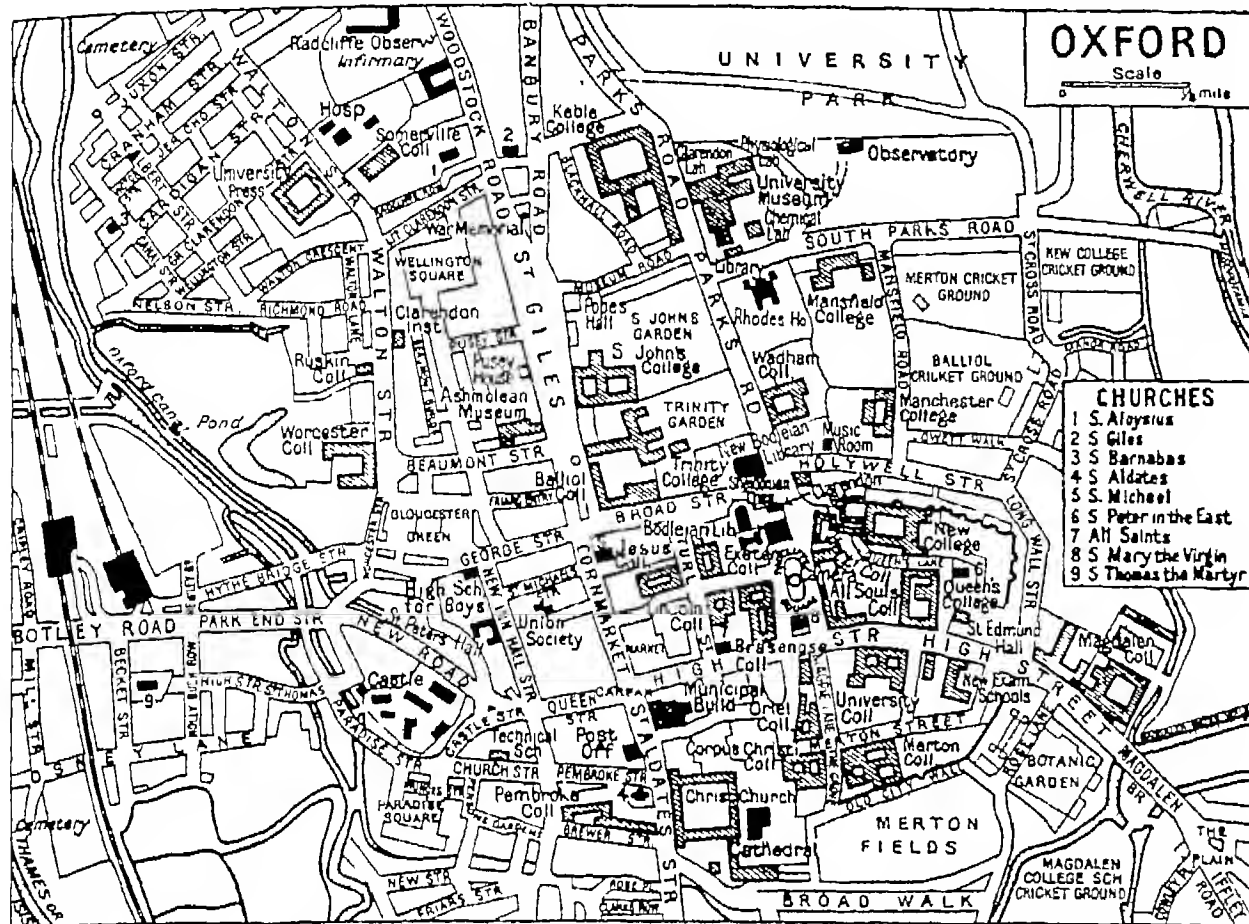
Across Magdalen Bridge, at the other end of the High Street, are modern suburbs. In N. Oxford, at Summertown, are numerous villas. The chief industries are steel pressing, motor works, and catering for members of the university; there are also breweries and a big cattle market.

The partly Norman cathedral, formerly the priory church of S. Frideswide, is included in Wolsey's foundation of Christ Church. Other interesting churches are the university church of S. Mary the Virgin (damaged by fire in 1946), S. Peter in the East, S. Giles, S. Barnabas, S. Aldate, and S. Michael. All Saints is the city church. Apart



Oxford. Air view of the city from the E. 1. Pembroke College. 2. Christ Church. 3. Corpus Christi College. 4. Merton College. 5. Town Hall. 6. Oriel College. 7. Jesus College. 8. St. Mary's Church. 9. Lincoln College. 10. Exeter College. 11. Broad Street. 12. Balliol College. 13. Trinity College. 14. Brasenose College. 15. Radcliffe Camera. 16. Bodleian Library. 17. Sheldonian Theatre. 18. Clarendon Building. 19. Bodleian Library extension. 20. Indian Institute. 21. All Souls College. 22. Hertford College. 23. Examination schools. 24. University College. 25. High Street. 26. Queen's College. 27. New College. 28. Old City Wall. 29. Botanic Garden. 30. Magdalen College

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Oxford. Plan of the university city showing position of the colleges and churches

from the colleges, museums, libraries, and other university buildings, the chief edifices are the municipal buildings, the castle, and the high school for boys. There are extensive remains of the old town walls.

Although Oxford owes so much of its prosperity to its university, it was important before that was founded. It was certainly so under the later Anglo-Saxon kings, and its position on the Thames was such that the Normans fortified it strongly. It received its first charter of incorporation about 1155. Maud was besieged here by Stephen in 1142, and the Provisions of Oxford were drawn up by the Mad Parliament in 1258. Charles I, when driven from London, made Oxford his headquarters, and Charles II called a parliament here in 1681. The bishopric was founded at the Reformation.

The city is governed by an elected council, but three aldermen and nine councillors represent the university. This divided authority, which originated about the 14th century, has not always worked as amicably as it does today. The city had two M.P.s 1295-1885; it now forms a borough constituency. In 1928 the city boundaries were extended, taking in the urban district of Headington and the Morris motor works at Cowley; they were further extended in 1957. A movement was started to prevent the surroundings from being spoiled by building. There is also the Oxford Preservation Trust. Pop. (1951) 98,684.

**Bibliography.** The Cathedral Church of Oxford, P. Dearmer, 1899; Oxford, A. Lang, new ed. 1916; Oxford, C. Hobhouse, 1938; City of Oxford, Royal Commission

on Historical Monuments, 1939; Oxford Replanned, T. Sharp, 1948; History of the City of Oxford, R. Fasnacht, 1954; Oxford Life, D. Baldson, 1957.

**Oxford, EARL OF.** English title held successively by the families of Vere and Harley. The great Norman family of Vere was represented in the time of William the Conqueror by Aubrey de Vere, the holder of extensive lands. In 1133 his descendant was made lord great chamberlain, and the earls of Oxford held that office until 1625. In 1142 another descendant was made earl of Oxford.

Robert, 9th earl (1362-92), was made duke of Ireland. He was a close friend of Richard II, and lost his honours, but the title was restored to his descendants, one of whom, John, 12th earl, was executed as a Lancastrian in 1462. His son, John, 13th earl (1443-1513), was also a prominent Lancastrian. Edward, 17th earl (1550-1604), was a typical Elizabethan, a gallant and writer of verse, also a spendthrift. Henry, 18th earl, died in 1625, when the great chamberlainship passed from the Veres. Aubrey, 20th earl, died in 1703, and the title became extinct.

In 1711 the statesman Robert Harley was made earl of Oxford. He was succeeded by his son Edward (1689-1741), who had no sons. The 3rd earl was therefore a cousin, Edward (d. 1755), in whose line the title remained until the death of Alfred, the 6th earl, in 1853, when it became extinct until revived in a slightly different form in 1925 for the 1st earl of Oxford and Asquith (*q.v.*). See Vere.

**Oxford, ROBERT HARLEY, 1ST EARL OF (1661-1724).** English statesman. Born in London,

Dec. 5, 1661, he entered parliament in 1689. Coming soon to the fore, he carried through the Triennial Bill, 1694. He was Speaker 1701-05, and in 1706 was appointed a commissioner for the union with Scotland, and secretary of state for the southern department. By this time he had obtained influence over Queen Anne.



1st Earl of Oxford, English statesman After Kneller

Assisted by his cousin, Abigail Hill, afterwards Lady Masham (*q.v.*), he destroyed the Marlborough interest, and in 1710 became chancellor of the exchequer and virtual prime minister. Despite the jealousy of the high Tory ministers and the bitter opposition of Marlborough and Godolphin, secret negotiations with France were begun in 1711, and the peace itself was signed two years later. Early in 1711 Harley had been created earl of Oxford and made lord high treasurer.

In 1714 Bolingbroke, disappointed by Harley's refusal to further his schemes for a restoration, began to plot against him, and persuaded Anne, a month before she died, to dismiss her minister. The next year Harley was impeached for concluding the French treaty, and was committed to the Tower, where he remained until 1717, when the impeachment fell through, though he was omitted from the Act of Grace. Harley died in London, May 21, 1724. A man of wide literary tastes, in 1705 he began the collection of MSS. which is famous as the Harleian MSS. (*q.v.*), preserved in the British Museum. *Consul! Life*, Roscoe, 1902.

**Oxford and Asquith, HERBERT HENRY ASQUITH, 1ST EARL OF (1852-1928).** British statesman.



1st Earl of Oxford and Asquith, British statesman

Born Sept. 12, 1852, at Morley, Yorks, he was educated at the Moravian School, Pudsey, the City of London School, and Balliol College, Oxford, to which he won a classical scholarship. At Oxford he was Craven scholar and president of the Union, and was made fellow of Balliol. Called to the bar at Lincoln's Inn, 1876, he



was for a time a university extension lecturer and a contributor to *The Economist*. His reputation was made by his work as junior counsel for the Irish Nationalist party during the Parnell commission, 1889.

Meanwhile in 1886 Asquith had won E. Fife as a Gladstonian Liberal, and he held the seat uninterruptedly until 1918. When the Liberals came to power in 1892 Gladstone appointed him home secretary. During his three years in that office he was responsible for the strengthening and reorganizing of the factory inspectorate, including the establishment of women inspectors, and for the re-establishment of the right of public meeting in Trafalgar Square. On Rosebery's retirement from the Liberal leadership in 1896, Asquith supported him, and during the S. African War became a conspicuous figure (with Grey and Haldane) in the Liberal Imperialist group. He was the most formidable antagonist of Chamberlain's tariff reform agitation, 1903-05. In Campbell-Bannerman's administration of 1905 he became chancellor of the exchequer. While in that office he laid the foundation of the old age pensions scheme, and distinguished for the first time between earned and unearned income for the purpose of taxation.

#### Eight Years as Premier

On Campbell-Bannerman's retirement, April, 1908, Asquith succeeded to the premiership, which he held continuously until Dec., 1916. The rejection by the upper house of the 1909 budget led to the prolonged conflict between the house of commons and the house of lords which dominated home politics for the next few years. For the narrow Liberal victories in the two resulting general elections of 1910 Asquith's own prestige was largely responsible; and he displayed high skill and courage in carrying the Parliament Act of 1911, by which the lords' absolute veto was reduced to a suspensory one. It was at one stage in the progress of this measure, in Aug., 1911, that he was howled down and refused a hearing in the house by an unruly section of his opponents, who accused him of being a traitor for having secured the king's consent to create new peers sufficient to ensure the passing of the measure. It was also at this period that he used with great effect the phrase "Wait and see"; originally uttered as the warning to his

opponents of a strong man who had made up his mind, the words were later unfairly quoted against him to suggest a dilatoriness in his own decisions.

Asquith had personal conduct of the negotiations which ended the coal strike of 1912, and was then called to face the angry passions aroused by the introduction of the Irish Home Rule Bill. The Ulster leaders, under Carson, threatened open revolt. Asquith strove to reach an agreed solution. His compromise giving the northern counties of Ireland exemption from Home Rule for five years was rejected by Ulster, and the threatened resignation of Army officers at the Curragh in the spring of 1914 led him to take on the additional office of war secretary. Whether or not he could have prevented civil war was left for ever in doubt by the sudden European crisis and the outbreak of the First Great War.

In the earliest months of that conflict, Asquith's speeches, firm in tone, and noble in temper, did much to win respect abroad for British policy and aims, notably his statement at the Mansion House, Nov., 1914: "We shall never sheathe the sword, which we have not lightly drawn, until Belgium has recovered all or more than she has lost." But in the months that followed the conduct of the war began to be criticised, notably the lack of suitable munitions, and in May, 1915, Asquith acceded to Conservative demands by forming a coalition govt., in which he remained prime minister. Further serious dissensions within the cabinet culminated in Lloyd George's proposal for an inner war cabinet from which the premier should be excluded. On Asquith's rejection of this, Lloyd George and others resigned, a move which led to Asquith's own resignation, and his supersession by Lloyd George, Dec., 1916.

In the 1918 election Asquith, as an independent Liberal, was defeated by a Conservative supporter of Lloyd George. The latter, when forming his new govt., was prepared to offer Asquith the office of lord chancellor. This was refused, but Asquith hoped to be allowed an important place in the delegation to the peace conference. Lloyd George, however, refused this. In 1920 Asquith was returned at a by-election for Paisley, and resumed his leadership, first of the independent Liberal opposition, then in 1923 of a superficially reunited Liberal op-

position. After the 1923 election, holding the balance between the Conservative and Labour parties, he elected to unseat the Baldwin govt., and to be thereby directly instrumental in setting up the first Labour govt. Later in 1924 he brought about the defeat of the Labour govt., but lost his seat at the general election following.

In 1925 he was created earl of Oxford and Asquith, and in 1926 resigned his leadership of the Liberal party, after further disputes with Lloyd George. He died Feb. 15, 1928, succeeded in the title by his grandson, Julian.

His contribution to British political life included a fine intellect, sound judgement, intense probity, and a reasoned philosophy of government. He was a man of great dignity and extraordinary magnanimity.

His autobiographical writings were *Fifty Years of Parliament*, 1926, and *Memories and Reflections*, 1928. He also wrote *The Genesis of the War*, 1923; and his collected speeches were published 1927. An official Life, by J. A. Spender and Cyril Asquith, was published 1932. His *Letters to a Friend*, ed. D. McCarthy, appeared in two series, 1933 and 1934. Asquith was twice married, first in 1877 to Helen Melland, who died in 1891, secondly in 1894 to Emma Alice Margaret (Margot) Tennant (*v.i.*). See Asquith, Anthony; Asquith, Herbert; Asquith, Raymond; Liberal; Lloyd-George, 1st Earl; Parliament Act.

**Oxford and Asquith, EMMA ALICE MARGARET (Margot), COUNTESS OF (1864-1945).** British



The Countess of Oxford and Asquith (Margot), British writer

writer. Sixth daughter of Sir Charles Tennant, she married in 1894 H. H. Asquith, later 1st earl of Oxford and Asquith (*v.s.*). She was one of the most brilliant and witty hostesses of her day, a member in her youth of the politico-literary coterie known as the "Souls." In 1922 she enjoyed a big success with a frank and lively *Autobiography*. Later publications included *Places and Persons*, 1925; *Lay Sermons*, 1927; *More Memories*, 1933; and a novel, *Octavia*, 1928. She died July 28, 1945. Anthony Asquith (*q.v.*) was her son.

**Oxford and Cambridge Club.** London social club. Founded in 1830, Lord Palmerston being among its originators, its first house was in St. James's Square, where it remained until a fine building was erected in 1838 by Sir Robert and Sydney Smirke, at 71-76, Pall Mall. Membership is restricted to men educated at either of the two universities.

**Oxford English Dictionary.** Dictionary of the English language published by the Oxford University Press. Begun in 1884, it was completed in 1928; an edition including a supplement devoted to words coined too late for inclusion in the main work was published in 1933. The editors were Sir James Murray, Henry Bradley, Sir William Craigie, and Dr. C. T. Onions. The 13 vols. contain 16,400 pages covering 414,825 words, not only of modern English but also of the archaic English of Chaucer, the Bible, and Shakespeare; of 240,165 main words in the dictionary, 52,464 are archaic and 9,731 are alien. The cost of production was £300,000. The work is regarded as the ultimate authority on English. A Shorter Oxford English Dictionary of 2,500 pages, projected in 1902, was published in 1933. The Concise Oxford Dictionary, adapted by F. G. and H. W. Fowler, was first pub. 1911; the Pocket Oxford Dictionary, 1924; the Little Oxford Dictionary, 1930.

**Oxford Group.** Evangelical movement founded in Oxford by Dr. Frank Buchman (*q.v.*) in 1921. Leaders were trained at various British and American universities, and by 1928 the crusade to convert the world from militant materialism to practical Christianity was launched. The name Oxford Group was first applied when eight students visited S. Africa in 1928.

The movement received the blessing of such figures as the archbishop of Canterbury, Lord Bennett, J. H. Hofmeyr, Bishop Berggrav, and Gen. Chiang Kai-shek. It taught that its followers must undergo a "change of heart," to be achieved by setting aside a period in the early morning (the "quiet time") in which they listened for the guidance of God. By 1937 the movement had spread to over 50 countries. Adverse criticism was aroused by the somewhat flamboyant personality of Buchman, and by the conversion of the movement into an association under the Companies Act in 1939; also because several prominent members declared in favour

of pacifism at a time when that was not a popular doctrine in England. The practice of public confession was also criticised.

In 1938 Buchman launched his Moral Rearmament campaign from East Ham town hall. During the Second Great War he toured the U.S.A., Canada, and Australia, and in 1941 the method of spreading the light by dramatic presentations was introduced. In 1946 the group bought the Westminster Theatre, London, but its productions did not attract much attention. It has offices at 4, Hay's Mews, London, W.1. See Moral Rearmament.

**Oxford House.** E. London community centre. Founded as an Anglican university settlement by members of Oxford university in 1884, the house in Mape Street, Bethnal Green, was later recognized by the local education authority as a community centre. It runs clubs for men, women, and children of all ages. There is residential accommodation for some 20 men and women, including the full-time staff of club leaders, etc. During the university vacations, courses are run in neighbourhood work and social background for students entering various professions. Contact is maintained with two daughter settlements, University House and S. Margaret's House, the latter for women only.

**Oxfordian Beds.** In geology, name given to the lowest subdivision of the Upper Jurassic rocks. They are typically developed in Oxfordshire, England, and are found in most districts from Dorset to Yorks. See Jurassic.

**Oxford Movement.** Name given to the movement for reforming the life and worship of the Church of England that began at Oxford in 1833. At that time the Church in general was in the state of lethargy into which it fell during the 18th century, and a number of Oxford men conceived the idea of making it more vigorous and powerful by increasing the number of services, reminding the clergy of their varied duties, and rendering it more than a mere adjunct of the state. An essential feature was the restoration of some of the ceremonial of worship that had fallen into disuse since the Reformation, and it was here that strong opposition was aroused. It was also called the Tractarian Movement because its aims were set forth in Tracts for the Times, a volume by various writers first published in 1834, while the adherents of the movement were called High

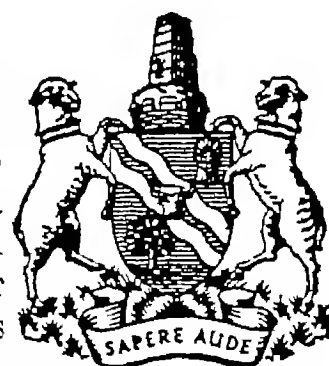
Churchmen or, by their foes, Ritualists. See Church of England; Keble; Newman, J. H.; Pusey; consult The O.M. and After, C. P. S. Clarke, 1932; People's Book of the O.M., C. B. Mortlock, 1933.

**Oxfordshire** OR OXON. South midland county of England, area 749 sq. m. It is bounded on the S. by the Thames. In the S.E. are the Chiltern Hills, reaching up to 700 ft., and near Oxford are some lesser heights. Spurs of the Cotswolds enter the county, but the rest is undulating or flat. Chief rivers, tributaries of the Thames, are the Windrush, Cherwell, Thame, and Evenlode.

Oxfordshire is an agricultural county, producing barley, wheat, oats, and various vegetables, while cattle, sheep, and pigs are reared. Paper is made in several villages. The co. is served by main rlys. and the Oxford Canal. Oxford is the county town; other places of note are Banbury, Henley-on-Thames, Chipping Norton, Bicester, Thame, and Witney. The county contains historic and picturesque places such as Woodstock, Burford, Bampton, Dorchester, once the centre of a great bishopric, Blenheim, Great Tew, Nuneham, and Goring. Broughton and Shirburn castles are two great houses.

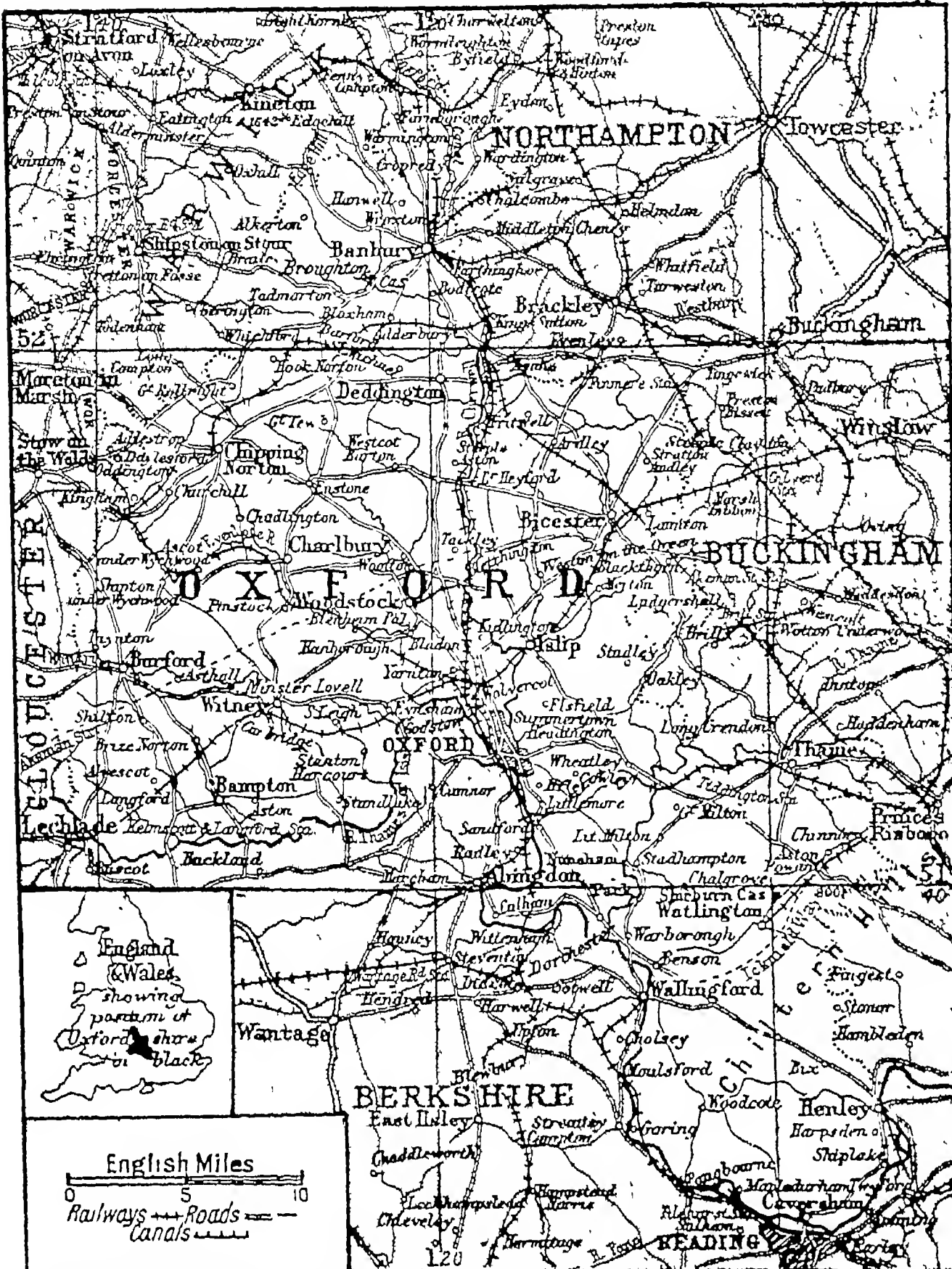
Of religious houses there are remains at Dorchester, Godstow, and elsewhere. There are beautiful churches at Bloxham, Langford, Iffley, Adderbury. Herein, too, are remains of Wychwood Forest. The co. includes three constituencies: one bor. (Oxford) and two co. (Henley and Banbury). Before the Norman Conquest Oxfordshire was part of Mercia. Later it was ravaged by the Danes and was made into a county. Many historic events took place at Oxford, and during the Civil War there was much fighting. Pop. (1951) 275,808.

**LITERARY ASSOCIATIONS.** Among writers born in the county may be mentioned Sir Henry Maine, at Caversham Grove; George Rawlinson, at Chadlington; Maria Edgeworth, at Black Bourton; Charles Reade, at Ipsden. Of Islip, Robert South (1634-1716) and William Buckland, the geologist, were rectors. At South Leigh, John Wesley preached his first sermon, 1725.



Oxfordshire. Seal of the county council





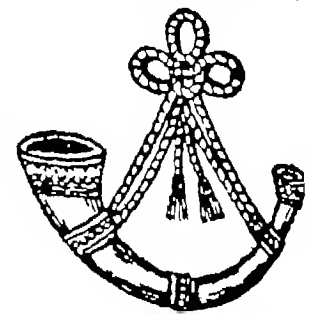
Oxfordshire. Map of the South Midland county of England, famous for its pastoral beauty and historical associations

Woodstock gives its name as title to one of Sir Walter Scott's novels, much of the action of which takes place in the county. At Woodstock, too, centre the many stories of Fair Rosamond, who is buried at Godstow. At Henley, Shenstone is supposed to have written his famous lines on an inn. Pope stayed at Stanton Harcourt, Bablock-Hythe and other places around Oxford are associated with Matthew Arnold's Scholar Gypsy. Kelmscott, on the Thames side near the Gloucester border, was for some time the home of William Morris, and there he is buried. Consult Victoria History of the co., 1939 et seq.

**Oxfordshire and Buckinghamshire Light Infantry.** Regiment of the British army. It was originally the 43rd and 52nd Foot, raised in 1741 and 1755 respectively, the two being united as the Oxfordshire and Buckinghamshire Light Infantry in 1881. The 43rd served under Wolfe at the capture

of Quebec in 1759 and in the West Indies. Both it and the 52nd fought in the American War of Independence. The 52nd served for many years in India, fighting in

Mysore and elsewhere, before going to Spain in 1800. In 1801 the two, together with the 95th, were placed under Moore and reorganized as the first British regiments of light infantry. Their deeds as the famous light division in the Peninsular War are immortalised in Napier's History. At Waterloo the 52nd repulsed the Old Guard. The regiment was engaged in the Kaffir War, 1851-53, and a detachment was on the Birkenhead when she was wrecked in 1852. It served in the Indian Mutiny, New Zealand, 1864-66, the Tirah campaign of 1897, and in the S. African War.



Oxford and Bucks Light Infantry badge

Seventeen battalions were raised for service in the First Great War and earned the battle honours: Mons; Ypres, 1914, '17; Langemarck, 1914, '17; Nonne Bosschen; Somme, 1916, '18; Cambrai, 1917, '18; Piave; Dorian, 1917, '18; Ctesiphon; Kut. In the Second Great War battalions served in Europe, Burma, N. Africa, and Italy.

Under an army re-organization of 1957, the regiment joined with the Rifle Brigade and the King's Royal Rifle Corps to form the Green Jacket Brigade.

**Oxford Street.** London thoroughfare. It runs W. from New Oxford Street, a link with Holborn, to join the Bayswater Road at the Marble Arch, W. Where it crosses Regent Street is Oxford Circus. New Oxford Street, opened in 1847, covers the site of the "rookery" of S. Giles. Oxford Street, named after Edward Harley, earl

of Oxford, early in the 18th century, was formerly Tyburn Road, being part of the route from the Old Bailey to the gibbet at Tyburn (q.v.). In the 20th century it became one of the main shopping centres of London's W. end. The Princess's Theatre (q.v.) was at No. 152. In Oxford St., called by him a "stony-hearted step-mother," De Quincey met the Ann of his Confessions.



Oxford Street, London. View of this busy shopping thoroughfare, looking west from New Bond Street

**Oxford University.** Senior of the two ancient English universities, dating from the reign of Henry II. Its development began about 1167, when foreign born scholars were driven from Paris. In 1214 came the first university charter, whereby the townsmen undertook to pay to the university a small tribute which still survives. There was much rioting between town and gown during the 13th and 14th cent.; but the university, supported by church and king, grew steadily stronger.



Oxford University arms

By 1546 Henry VIII had handed over Wolsey's property and buildings, licensed in 1525 as Cardinal college, to the dean and canons of the cathedral, which was and is part of Christ Church (The House). In 1571 the university was incorporated by Act of parliament. The statutes made by Archbishop Laud, chancellor of the university, and introduced in 1636, were amended in 1760 after a great struggle. The constitution was again revised in 1854, and in 1877. In 1871 religious tests were abolished. The royal commission of 1919, and the statutory commission which followed, led to the receipt of an annual Treasury grant.

The colleges, halls, and societies are independent corporations. The colleges (other than new foundations) make financial contributions to the university. To become a member of the university ("matriculate"), it is necessary first to be admitted by a college, hall, or society. These are: University (1249); Balliol (1263); Merton (1264); Exeter (1314); Oriel (1326); Queen's (1340); New College (1379); Lincoln (1427); All Souls (1438); Magdalen (1458); Brasenose (1509); Corpus Christi (1517); Christ Church (1546); Trinity (1555 [N.S.]); S. John's (1555); Jesus (1571); Wadham (1612); Pembroke (1624); Worcester (1714); Hertford (1740); S. Edmund hall (1317). New foundations include Keble (1870); S. Peter's hall (1928); S. Catherine's society (non-collegiate body) (1868); Nuffield (1937); St. Antony's (1950); and several permanent private halls, e.g. Mansfield College. The recognized societies of women students are Lady Margaret hall (1878); Somerville (1879); S. Hugh's

(1886); S. Hilda's (1893); S. Anne's (formerly society of Oxford home-students) (1879).

The head of the university is the chancellor, usually some illustrious non-resident member; the acting head is the vice-chancellor, a chosen head of one of the colleges, nominated annually by the chancellor and usually holding office for two years. Two proctors, elected annually by the colleges in turn, are responsible for the discipline of the university. From 1604 to 1945, the university returned two members to parliament.

The governing bodies are: the hebdomadal council (five ex-officio members and 18 elected members), through which all legislative proposals must pass; the congregation of the university (most members of which are resident graduate teachers or on the administrative staff), in which is vested nearly all the legislative power; and convocation (all masters and doctors on the books, but retaining few duties). The curators of the university chest manage finance. The general board of the faculties supervises the studies and examinations of the university and the work of the 14 faculty boards.

Degrees are given in arts, divinity, law, medicine, music, letters, science, and philosophy. Normally an undergraduate takes an arts course of three or four years leading to the B.A. degree. For this he must pass three examinations: responsions (from which he can secure exemption); the first public examination—an intermediate examination in the candidate's subject; the second public examination—either a final honour, or a final pass, school. At the end of seven years from matriculation a B.A. may be admitted to the degree of M.A. without further examination. There are research degrees for those who have already been admitted to a first degree.

University property in Oxford includes the Bodleian library, the Ashmolean museum, the Sheldonian theatre, the university observatory, under the direction of the Savilian professor of astronomy. There are 89 professorships; many are ancient chairs, the oldest being the Lady Margaret professorship of divinity (1502). Five Regius professorships, divinity, medicine, civil law, Hebrew, and Greek, were founded by Henry VIII. In 1937 Lord Nuffield founded four medical professorships.

In 1914 there were 4,025 undergraduates; in 1938-39, 6,659; in

1958, about 8,300. Many social activities and sports are offered by university and college clubs. The Union society provides weekly debates; the Oxford University dramatic society (O.U.D.S.) is famed. The events held every year against Cambridge University entitle the participants to a "blue" (*q.v.*). See also separate entries under the colleges and other institutions of the university.

**Bibliography.** Oxford and its Story, C. Headlam, 1912; History of the University of Oxford, Sir Charles Mallet, 1924; Oxford—its place in National History, J. A. R. Marriott, 1933; Degrees by Degrees A. M. A. H. Rogers, 1938; Oxford. C. Hobhouse 1939; Oxford University Handbook (annually).

**Oxford University Press.** Printing press and publishing house at Oxford which dates back to 1478 and has been continuous since 1586. The first Oxford Bible was published in 1675. Printing was carried on in the Sheldonian theatre during 1669-1713, and in the Clarendon Building in Broad Street until 1830, when the press removed to extensive premises in Walton Street. The type foundry is the oldest in England.

The Clarendon Press, the editorial and production department at Oxford which produces learned books and educational books, was so-named in 1713, when, from the profits of Clarendon's History of the Rebellion, new offices were erected. The London publishing house is at Amen House, Warwick Square, London; the paper mill at Wolvercote, near Oxford.

**Oxidation.** Term used in chemistry to describe a process whereby oxygen is given to another substance, or is made to remove hydrogen from a substance. Examples are the interaction between sulphurous acid and hydrogen peroxide when oxygen is given to the former substance, or the oxidation of sulphuretted hydrogen when hydrogen may be removed. The converse of oxidation is called reduction. Many important reagents are used in organic chemistry to effect oxidation, e.g. nitric acid, potassium permanganate, potassium dichromate and sulphuric acid, chromium trioxide and glacial acetic acid. See Oxygen.

**Oxides.** Compounds of elements with oxygen. Except fluorine and the inert gases, all elements form at least one such compound, and some two and even more. With electro-negative



elements (metals), oxygen forms basic oxides, and with electro-positive elements, acidic oxides. Between the extremes there is a fairly continuous series, and intermediate oxides may behave as



Oxlip. Leaves and flower-spray; inset, roots

either acidic or basic compounds according to conditions. Oxygen itself being electro-positive, where more than one oxide is formed, the higher tends to be more acidic; thus chromous oxide ( $\text{Cr}_2\text{O}_3$ ) is basic, forming salts with acids, e.g. chromous sulphate,  $\text{Cr}_2(\text{SO}_4)_3$ , with sulphuric acid; whilst chromic oxide ( $\text{CrO}_3$ ) is acidic, forming salts with bases, e.g. potassium chromate ( $\text{K}_2\text{CrO}_4$ ) with potassium oxide. As to sulphur, both oxides  $\text{SO}_2$  and  $\text{SO}_3$  are acidic, but sulphuric acid, the former, is much stronger than sulphurous acid.

As an example of an intermediate (amphoteric) oxide, alumina ( $\text{Al}_2\text{O}_3$ ) may be taken. With strong bases such as soda ( $\text{NaOH}$ ) it forms salts (aluminates), which are, however, readily decomposed on diluting with water. The hydrated oxide precipitated is readily soluble in acids to form salts, e.g. aluminium sulphate  $\text{Al}_2(\text{SO}_4)_3$ . Carbon monoxide ( $\text{CO}$ ) is neutral, but the higher oxide  $\text{CO}_2$  is definitely acidic. Similarly with nitrogen, the lowest oxide ( $\text{NO}$ ) is neutral, the next ( $\text{N}_2\text{O}_3$ ) forms the weak nitrous acid ( $\text{HNO}_2$ ), whilst the higher oxide  $\text{N}_2\text{O}_5$  forms the strong nitric acid,  $\text{HNO}_3$ .

**PEROXIDES.** Some of the higher oxides, e.g.  $\text{BaO}_2$ , are unstable, readily decomposing on heating or on dilution with water. They then liberate oxygen gas, leaving the lower oxide (e.g.  $\text{BaO}$ ).

**OXIDE ORES.** Many important metals exist in nature as oxides. The various oxides of iron, varying in colour from yellow and pale green to purple and black, occur almost everywhere and are mainly responsible for the range of colours

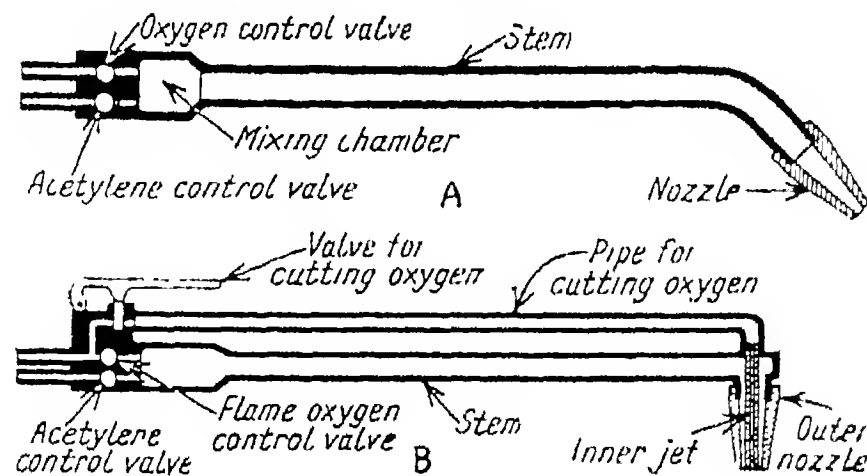
exhibited by earths, sands, and rocks. The most useful natural iron oxide ores are the haematites ( $\text{Fe}_2\text{O}_3$ ) and spathic iron ore. Other naturally occurring metallic oxides of industrial importance are cuprite (copper ruby ore), zincite (zinc oxide,  $\text{ZnO}$ ), and cassiterite or tinstone ( $\text{SnO}_2$ ).

**Oxlip** (*Primula elatior*). Perennial herb of the family Primulaceae. It is a native of Europe and Siberia. In England it is restricted to the counties of Bedford, Cambridge, Suffolk, and Essex. Its flowers are similar in size and colour to those of the primrose with short individual stalks springing from the top of a stout, tall stem like that of the cowslip. The garden flower commonly called oxlip is a hybrid between primrose and cowslip.

**Ox-Pecker** OR RHINOCEROS BIRD (*Buphaga*). Bird found in Africa. It is dull brown above and light brown beneath, and about the size of a starling. Insectivorous, it gets its name from the habit of settling on the backs of the ox and rhinoceros to search for parasitic insects.

**Oxus.** Ancient name of the river now the Amu-Daria (*q.v.*).

**Oxyacetylene Blowpipe** OR TORCH. Instrument used for mixing and burning oxygen and acetylene gases together. It produces an intensely hot flame, used



Oxyacetylene Blowpipe. Diagrams illustrating the main features of A, the blowpipe, and B, gas cutting blowpipe

in oxyacetylene welding and gas cutting. The maximum flame temperature is about  $3,130^\circ\text{C}$ . The gases are mixed in the desired proportions either by mechanical control of the volume of the gases, supplied at equal pressures, or by dynamic control, using relatively high pressure oxygen blowing at high velocity to pick up low pressure acetylene. For most purposes the supply of oxygen is only 40 p.c. of that required for complete combustion, so that the inner part of the flame envelope is reducing in character. The main features are shown in the diagrams.

For welding, the blowpipe flame is used to heat and/or melt the metal joint faces to a suitable temperature for a metallic union to be made between them.

**Oxychlorides.** Metallic chlorides which also contain oxygen. They are formed when certain metallic chlorides are added to water, e.g. when bismuth chloride ( $\text{BiCl}_3$ ) or antimony chloride ( $\text{SbCl}_3$ ) is added to water, the oxychloride,  $\text{BiOCl}$  or  $\text{SbOCl}$ , is produced. Zinc chloride also forms an oxychloride on keeping, or on evaporating a solution of the salt. Some substances such as ferric chloride ( $\text{FeCl}_3$ ), cupric chloride ( $\text{CuCl}_2$ ), and bismuth chloride ( $\text{BiCl}_3$ ), yield oxychlorides when heated in dry air. Magnesium oxychloride or Sorel cement is a strong binding agent.

**Oxygen.** Most widely distributed of the chemical elements, having the chemical symbol O, atomic number 8, atomic weight 16. It is a colourless, odourless, tasteless gas, and exists in the free state in the atmosphere, of which it forms about 21 p.c. by volume. Oxygen also occurs in enormous quantities in the combined state: eight-ninths, by weight, of water consists of oxygen, and oxides form a large part of the earth's crust. Oxygen is essential to life and combustion.

Oxygen was discovered in 1774 by Priestley, who called it 'de-phlogisticated air,' and simultaneously by Scheele (1742-86), a Swedish apothecary, who named it 'empyreal' or 'fire-air.' Lavoisier, regarding it as the essential constituent of acids, gave it the name oxygène (acid-former).

The gas was first liquefied in 1877 by Caillatet and Pictet,

and in liquid form is pale blue.

The methods of preparing oxygen are as follows:

(1) By heating mercuric oxide ( $\text{HgO}$ ) or red oxide of mercury in a glass retort, Priestley's method.

(2) By strongly heating manganese dioxide ( $\text{MnO}_2$ ) in an iron retort. One-third of its oxygen is given off, a lower manganese oxide ( $\text{Mn}_2\text{O}_3$ ) being formed. Other compounds like lead dioxide ( $\text{PbO}_2$ ), barium peroxide ( $\text{BaO}_2$ ), and chromium trioxide ( $\text{CrO}_3$ ), lose part of their oxygen when heated in the same way.

(3) When potassium chlorate ( $\text{KClO}_3$ ) is heated it gives off its

oxygen, but in order to obtain the evolution of oxygen at a lower temperature it is mixed with one-eighth its weight of manganese dioxide. This is the method usually followed in the laboratory and was employed for making large quantities of oxygen before the discovery of cheaper processes.

(4) When barium peroxide ( $\text{BaO}_2$ ) is heated it gives off an atom of oxygen, and yields the lower oxide ( $\text{BaO}$ ). This process has been used on a large scale for the preparation of oxygen, the advantage being its economical working. It is known as the Brin process, and was originally patented in 1880. The barium monoxide which is formed also has the property of absorbing oxygen when heated to a dull redness in the air. Hence, by alternately forming and decomposing the barium peroxide, the same quantity of barium salt can be used over and over again.

(5) The preparation of oxygen from liquid air depends upon the fact that the two chief constituent liquid gases, nitrogen and oxygen, evaporate at different temperatures nitrogen being more volatile. Methods of separating them are worked on a large scale. Liquid air was first prepared by Sir James Dewar and the apparatus for making it on a large scale was devised by Hampson.

(6) Other methods of preparing oxygen may be summarised. The peroxides or perborates of sodium or other alkalis give off oxygen when moistened with water, especially if they are previously mixed with a catalyst. This method is employed for producing oxygen under the name of "oxylith," and also in preparing tablets and salts used for oxygen baths. When a concentrated solution of bleaching powder to which a little cobalt oxide has been added is heated, oxygen is given off. Oxygen is also evolved from peroxide of hydrogen, especially when it is acidified with sulphuric acid and a solution of potassium permanganate is added gradually.

**PRACTICAL USES.** The main use of oxygen in the medical field is in connexion with oxygen therapy and anaesthetics. It also assists breathing, where necessary either at high altitudes or at great depths. For medical use it is supplied normally in small cylinders, but large hospitals may have a pipe line installed. Oxygen is applied in the industrial field for welding and cutting. In the former, the high temperature of the

flame when used with a fuel gas such as acetylene, coal-gas, hydrogen, or propane, allows of oxy-acetylene welding, brazing, flame cleaning, flame hardening, flame softening, and flame spinning. The oxygen cutting apparatus is described below. The element is supplied for industrial use either (a) in liquid form and by means of evaporators converted to gas and passed to points of use by pipelines; or (b) compressed in steel cylinders of various sizes.

**Oxyhydrogen Flame.** A type of flame produced by burning a mixture of oxygen and hydrogen gases in a blowpipe similar to that used for oxyacetylene (*q.v.*). The temperature of the flame is about  $2,800^\circ \text{C}$ . at its hottest point. The flame has a limited use for welding such materials as aluminium, when the proportion of hydrogen is considerably in excess of that required for perfect combustion, so that a reducing envelope is formed. The intense white light given off when such a flame is allowed to play on a cylinder of lime is known as a limelight or Drummond light.

**Oxymoron** (Gr. *oxus*, sharp; *moros*, foolish). Figure of speech, usually rhetorical, in which an effect is achieved by an apparent contradiction in terms. An example is in Francis Thompson's *Hound of Heaven*:

In faith to Him their fickleness to me;  
Their traitorous trueness and their loyal deceit.

**Oxyrhynchus.** Ancient town near Behnesa, on the Bahr Ynsuf, Upper Egypt. The oxyrhynchus ("sharp-snouted") fish (*Mormyrus*) was venerated in the vicinity. In the 5th century the town had over 300 churches, 10,000 monks, and 20,000 nuns. Papyri have been found here. See *Agrapha*.

**Oxytropis.** Genus of perennial herbs and shrubs of the family Leguminosae. They are natives of Europe, Asia, and N. America. The leaves are divided into two rows of leaflets. The flowers are pea-like, purple, white, or pale yellow, grouped in spikes or sprays.

**Oyama, IWAQ, PRINCE** (1842-1916). Japanese soldier, born in Satsuma. He visited Europe during the Franco-Prussian War, and in the civil war of 1877 led a brigade of the imperial army. During the war with China, 1894-95, he commanded the 2nd army, whose exploits included the taking of Port Arthur and Wei-hai-wei. In the Russo-Japanese War, 1904-05, now marquess and field-marshal,

he was in chief command. His skilful conduct of operations, notably at the battles of Liao-Yang, Shaho, and Mukden, brought him the title of prince in 1907. The year before he had received the British order of merit. He died Dec. 12, 1916.

**Oyapoc.** River of S. America. It rises in the Tumac Humac Mts., and flows N.E. to the Atlantic Ocean, forming the frontier between Brazil and French Guiana. On its upper course are the Matouchi Falls, while rapids interfere with navigation. Its length is 280 m. Oyapoc village, 25 m. inland, trades in rubber, balata, and gold.

**Oyer and Terminer.** Anglo-French legal term meaning to hear and determine. In England courts of assize sit by virtue of the commission issued by the king to the persons therein named, one of whom, at least, is always a judge, to hear and determine all causes, and to deliver all gaols of the prisoners there awaiting trial for all treasons, felonies, and misdemeanours. Sometimes special commissions are issued, as when there have been serious riots.

**Oykell.** River of Scotland. It forms part of the boundary of Ross and Cromarty with Sutherland, rising in Loch Ailsh, and flowing E.S.E. into Dornoch Firth at Bonar Bridge. Its valley forms a highway through the hills of N. Scotland at its narrowest. Ben More rises N. of the source. Between Cassley Bridge and Oykell Bridge a battle was fought c. 1397 between Macleods of Assynt and Mackays of Sutherland. Montrose in 1650 escaped up the Oykell valley after his last battle at Corbiesdale.

**Oyster.** Name generally applied to a wide variety of bivalve molluscs, but in a true zoological sense only to bivalves of the genus *Ostrea*. About 100 living and 500 fossil species from the Triassic age to the present day have been described. Probably some of these are varieties and not separate species; many descriptions relate only to the shape of the shell and not to the animal within.

Oysters are marine animals occurring in temperate, sub-tropical, and tropical regions in numerous localities throughout the world, frequently near the seashore in fairly shallow water. The flat or European oyster (*O. edulis*) occurs in suitable places on the Atlantic coast of Europe, including the British Isles. Its shell consists of two subcircular valves, of which the right is almost flat and the left saucer-shaped. They are



joined by a hinge ligament, at the slightly pointed part of the valve, and a single adductor muscle which pulls the valves together. The shell has an outer layer of conchyolin and two inner ones of calcareous material, the exterior presenting a rough and ridged appearance while the interior is of a pearly substance.

The young oyster becomes attached to a rock or other shell and in natural conditions remains so for most of its life. In order to obtain regular shells, cultivated oysters are freed from their attachment and grown on firm sea beds. But the attached mode of life has led to the loss of the muscular foot, typical of bivalves. The shell is lined by the bi-lobed mantle, enclosing the mantle cavity within which are the gills. By ciliary action these produce a current of water which passes into an inhalant chamber, through spaces in the gills, which so act as a sieve to food particles; then to an exhalant chamber, thence to the exterior. The food, almost entirely minute plant life, is transferred to the mouth by various ciliated tracts of the gills.

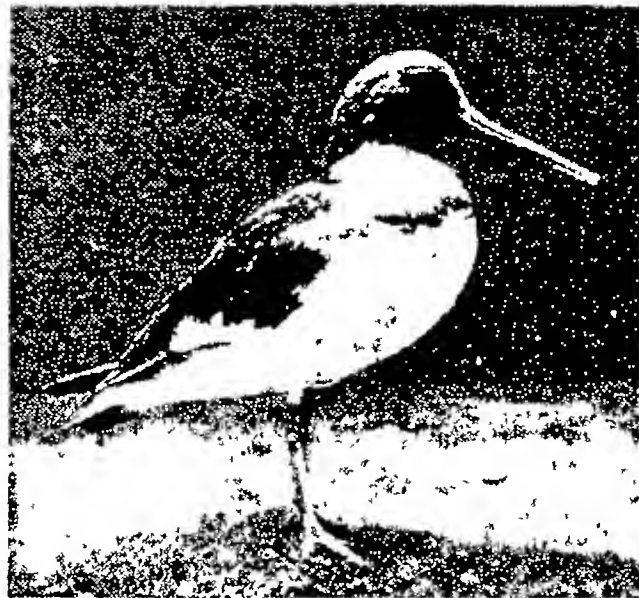
*O. edulis* may be male, female, or hermaphrodite. The sex usually changes several times during the life of one individual, that from female to male taking place in a few days just after spawning, its counterpart in the following spring. Spawning occurs in early summer; many eggs are extruded into the mantle cavity where they remain for about ten days. The larvae are originally white, but as their shell grows they become dark. The young are discharged into the sea as free-swimming individuals and are distributed by tidal currents over a wide area. They remain in this state for 10-14 days, then drop to the bottom to become permanently attached to a hard object by the left valve of the shell.

Three kinds of oysters are normally sold on the English market: the American (*O. virginica*) from N. America; the Portuguese (*O. angulata*) from the mouth of the Tagus; and the European (*O. edulis*) from France, Holland, and beds at Whitstable and Colchester in the U.K. The oyster pop. of Europe considerably declined during and after the Second Great War. Consult Oyster Biology and Oyster Culture, J. H. Orton, 1939.

**Oyster Bay.** Health resort and residential town of New York, U.S.A., in Nassau co. It stands on a picturesque, well-sheltered bay

on the N. coast of Long Island, and is served by the Long Island rly. and a line of steamers plying to New York city. Theodore Roosevelt lived on Sagamore Hill, overlooking the town. Pop. 5,000.

**Oyster Catcher** OR SEA PIE (*Haematopus ostralegus*). British shore bird belonging to the plover



Oyster Catcher. Specimen of this British shore bird  
W. S. Berridge, F. Z. S.

tribe. The head and upper parts are black and the under parts white, while the long and straight beak is reddish orange. It is found about all the more rocky parts of the coast, and feeds upon molluscs, crustaceans, and marine worms.

**Oystermouth.** Watering-place of Glamorganshire, Wales, part of the borough of Swansea since 1920. It stands near Mumbles Head, 5 m. S.S.W. of Swansea, and is the terminus of a branch rly. Culture of oysters is an industry, although less extensive than formerly. There was a Roman station near, and a castle was built at Oystermouth soon after 1100. The site and ruins of the castle were given to the town by the duke of Beaufort in 1928.

**Ozark Mts.** (Fr. *Bois aux arcs*, wood for bows). Wooded plateau of the U.S.A. Lying between the Missouri and Arkansas rivers, it occupies a large portion of the states of Arkansas and Missouri, and penetrates into Oklahoma and Kansas, its average height being from 1,500 ft. to 2,000 ft. The Ouachita Mts., S. of the Arkansas, are an extension of the Ozarks.

**Ozobrome Process.** Method of making carbon prints, now virtually superseded by the Carbro process. Ozobrome prints were called ozotypes.

**Ozoena** OR ATROPHIC RHINITIS. Affection of the nose characterised by the formation of crusts which have an unmistakable penetrating odour. The patient is unaware of this, as his sense of smell is lost. The condition is difficult to treat.

**Ozokerite.** Naturally occurring hydrocarbon wax. It is

usually dark brown and often contains mineral matter and sometimes oil. It is associated with petroleum, and the most famous source is at Borzslaw in Poland, where it was mined on a large scale from 1870 to 1900, the output subsequently declining. Ozokerite is a residual product from seepages of waxy petroleum. When refined it is a white to yellow, hard, microcrystalline wax known as ceresin and used in polishes, electrical insulation compounds, etc.

**Ozone ( $O_3$ ).** Gas with a peculiar odour somewhat resembling that of dilute chlorine. It was observed in 1785 that when an electric spark is passed through oxygen a distinct odour is apparent, but it was not until 1840 that the production of a definite gas—ozone—was proved. It is a form of oxygen containing three atoms in the molecule against two atoms in a molecule of ordinary oxygen. The gas readily changes into ordinary oxygen, but has distinct properties. Contrary to popular belief, the familiar smell of the seashore is not due to ozone, but to decaying marine vegetation. Ozone is produced on a large scale by the discharge from an electrical machine in oxygen or air. It is also formed by the action of cathode or ultra-violet rays on oxygen.

There is little ozone in the lower layers of the atmosphere, but it is comparatively plentiful at heights of 15-20 m. Information regarding the vertical distribution of ozone is provided by examining, at intervals throughout the day, the ultra-violet light coming down from the zenith sky and by the spectroscopic examination of sunlight. Ozone plays an important part in determining the thermal structure of the upper atmosphere, e.g. it is generally acknowledged that the high temps. of the region extending 25-40 m. above the sea are due largely to the absorption of solar radiation by ozone.

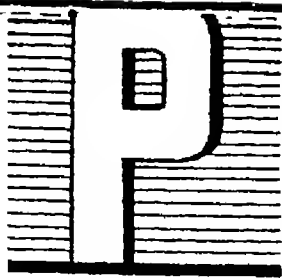
When ozone is strongly compressed an indigo-coloured liquid is obtained. Ozone is one of the most powerful oxidising agents known, and this property is utilised in a number of ways, e.g. for purification of air; for medicinal use in tuberculosis and whooping cough; sterilising drinking water; bleaching waxes, fats, fabrics, and yarns; "ageing" wood for musical instruments; oxidising or thickening oils; maturing wines and spirits; and sweetening foul beer casks.

**P**, SIXTEENTH in order in the English and other Western alphabets, corresponds with the North Semitic seventeenth letter, *pe*, meaning "mouth," and the Greek fifteenth character, *pi*, written in a variety of forms, North-Semitic:

) ) 7 1 7 7 7 ;  
7 ) 7 7 7 7 7 7

Greek:

1 7 7 7  
The form which,



through the Etruscan, passed to the Roman alphabet was **P**, the Romans rounding the loop **P** and bringing it towards the upright stem. There were a number of Greek forms also used by the Romans, but it was the rounded form which eventually survived and provided the present sixteenth character of the English alphabet.

The small letter *p* is a smaller version of the capital *P*, with the descender below the writing line.

**P** Sixteenth letter of the English and Latin alphabets.

It is a voiceless labial or lip-sound. Its normal sound is that in *peck*, although in some words it is mute before another consonant, as in *psalm*, *ptarmigan*. *P* is intrusive between *m* and *t*, as in *empty*. The combination *ph* in words derived from the Greek is usually pronounced *f*, as in *philology*; sometimes, as in *apophthegm* and *phthisis*, it is not heard.

**Paardeberg**, BATTLE OF. Fought between the British and the Boers, Feb. 18, 1900. Cronje with a force of Boers was holding the entrenchments at Magersfontein, while French, with the main army of Lord Roberts behind him, marched to cut him off from Bloemfontein. This move forced Cronje from his camp, and, with 5,000 men and many women and children, he was soon marching by the side of the Modder to the Orange Free State. Near Paardeberg Hill the British approached him. The Boers entrenched themselves in the dry bed of the Modder. On Feb. 18 they were attacked from both sides, but when night fell the British infantry had lost heavily, and the Boer position was untaken. The attack was not renewed, but starvation did its work, and on Feb. 27, 4,000 Boers surrendered. The British, with 15,000 men in the field, lost 1,262 killed and wounded. See South African War.

**Paarl** (Du., pearl). Inland town of Cape Province, South Africa, 36 m. N.E. of Cape Town, centre of the chief wine-producing district of the Union. It extends for 7 m. along the r. Berg. The vine and tobacco are grown near by; there are also granite quarries. The town has textile and sawmills, and factories making glass, plastics, etc., and canning fruit. Paarl was founded in 1690 by Huguenot settlers who brought the vine with them. Pop. (1955 est.) 56,360 (17,600 white). To the W. of the town is Paarl Mt., on which are three gigantic boulders, the Paarl, the Britannia, and Gordon's Rock.

**Pabna**. District and town of East Pakistan, in Rajshahi div.

The dist. is in the corner between the Brahmaputra and the Padma distributary of the Ganges. Two-thirds of the area is cultivated, rice and jute being the chief crops. The town stands on the left bank of the Padma. Area of dist., 1,836 sq. m. Pop. (1951) town, 31,924; dist. (est.), 2,000,000.

**Pabst**, GEORG WILHELM (b. 1885). Austrian film director. Born at Raudnitz (Raudnice), Bohemia, Aug. 27, 1885, and educated in Vienna, he started his career as an actor; then during 1922-32 made films in Germany, notably *Die Freudlose Gasse*, 1925; *Geheimnisse einer Seele* (secrets of a soul), with Freud as co-director, 1926; *Die Weisse Holle von Piz Palu*, 1929; *Westfront*, and *Dreigroschenoper*, 1930; *Kameradschaft*, 1931. He worked in France 1933-39 (producing in 1933 *Don Quichotte* with Chaliapin and George Robey) except for a visit to the U.S.A. where he made *A Modern Hero*, 1934. From 1941 he worked in Germany again. His early pictures were distinguished by unusual lighting effects and camera angles during a period of cinematic experiment in European film studios.

**Paca** OR SPOTTED CAVY (*Caelogenys paca*). Rodent mammal. Related to the agouti, it is found in Central and S. America. Its fur is brown with rows of white spots along the sides of the body. It is about 2 ft. long, and in form suggests a rabbit without the charac-



Paca or Spotted Cavy of S. America

teristic ears or the long hind limbs. It lives in burrows, and does great damage to the crops.

**Pace** (Fr. *pas*, from Lat. *passus*). Linear measure, representing the distance traversed by the foot from the place where it is taken up to where it is set down in walking. The Roman pace, measured from the heelmark of one foot to the mark where it next touched the ground, was equivalent to two modern paces and contained 5 Roman feet each of about 11.64 English ins. A thousand paces equalled one Roman mile.

The pace in the 20th century has been principally used as a measure for military marching. The British army pace, defined as the distance from the heel of one footstep to the heel of the next, is 30 ins. for quick time and 40 ins. for double-time marching. The U.S. army equivalents are 30 ins. and 36 ins.

**Pace-Making**. The term denotes setting the speed in certain athletic events. The pacer in running and cycling on tracks follows instructions to enable the principal for whom he acts to win a race or beat a record. Faster times are usually made with a pacer, especially in cycling, where the pacer (often a motor-cyclist) acts incidentally as a wind-screen for the principal.

The word pacer is also applied to a horse whose method of progression is the pace, i.e. both off legs strike the ground in unison alternately with both near legs.

**Pachacamac**. Great mud-brick ruin on the coast of Peru. It stands in the Lurin valley about 20 m. S. of Lima. Occupied from an early period to the Spanish conquest, it contains Inca and older buildings. The inhabited area was dominated by two, or possibly three, terraced pyramidal structures, of which one is ascribed to the worship of the ancient coastal creator-god Pachacamac. This is overshadowed by the great temple of the sun, whose worship was imposed by the conquering Incas in the 15th century, while they incorporated Pachacamac in their pantheon. A great pilgrimage centre



to the end, it was overthrown by Hernando Pizarro (a brother of Francisco) in 1533.

**Pachino.** Coast town of Syracuse prov., Sicily, Italy. It is situated 5 m. N.W. of Cape Passero and 13 m. by road S. of Noto, and was captured undamaged by Royal Marines during the Second Great War on July 10, 1943, the day of the Allied landings in Sicily. Pop. (1951) 24,177.

**Pachisi** (Hind. *pachis*, twenty-five). Indian game for four players played on a board with counters and dice, of which a parlour equivalent exists in Great Britain under the name of Ludo.

**Pachmann, Vladimir de** (1848-1933). A Russian pianist. Born at Odessa, July 27, 1848, he studied at Vienna conservatoire, and made his debut in Russia in 1869. On his first appearance in London in 1882, he displayed that complete mastery of technique which made him world-famous. As an interpreter of Chopin he was for long unsurpassed, his performances being marked by super-sensitive touch and delicacy of feeling. Later eccentricities, such as his refusal to perform except in Chopin's cloak and the pantomimic expression of his childlike enthu-



Vladimir de  
Pachmann,  
Russian pianist

in the Madhya union. Situated on the Mahadeo range, separating the Godavari from the Narbada valley, it is 3,500 ft. above mean sea level, and is the seat of government of the Madhya union during the hot weather. Its name is sometimes applied to the Mahadeo range. Pop. 6,704.

**Pachuca.** City of Mexico, capital of the state of Hidalgo. It is situated among mts. at an alt. of 7,870 ft., 57 m. N.E. of Mexico City, to which there is a motor road. It is in Mexico's greatest silver-mining district, exploited since before the Spanish conquest. Pop. (1950) 58,683.

**Pachydermata** (Gr. *pachys*, thick; *derma*, skin). Obsolescent name given by Cuvier to those

siamsms and aversions, did not deter music-lovers from enjoying his unique gift of interpretation Hedied Jan. 7, 1933.

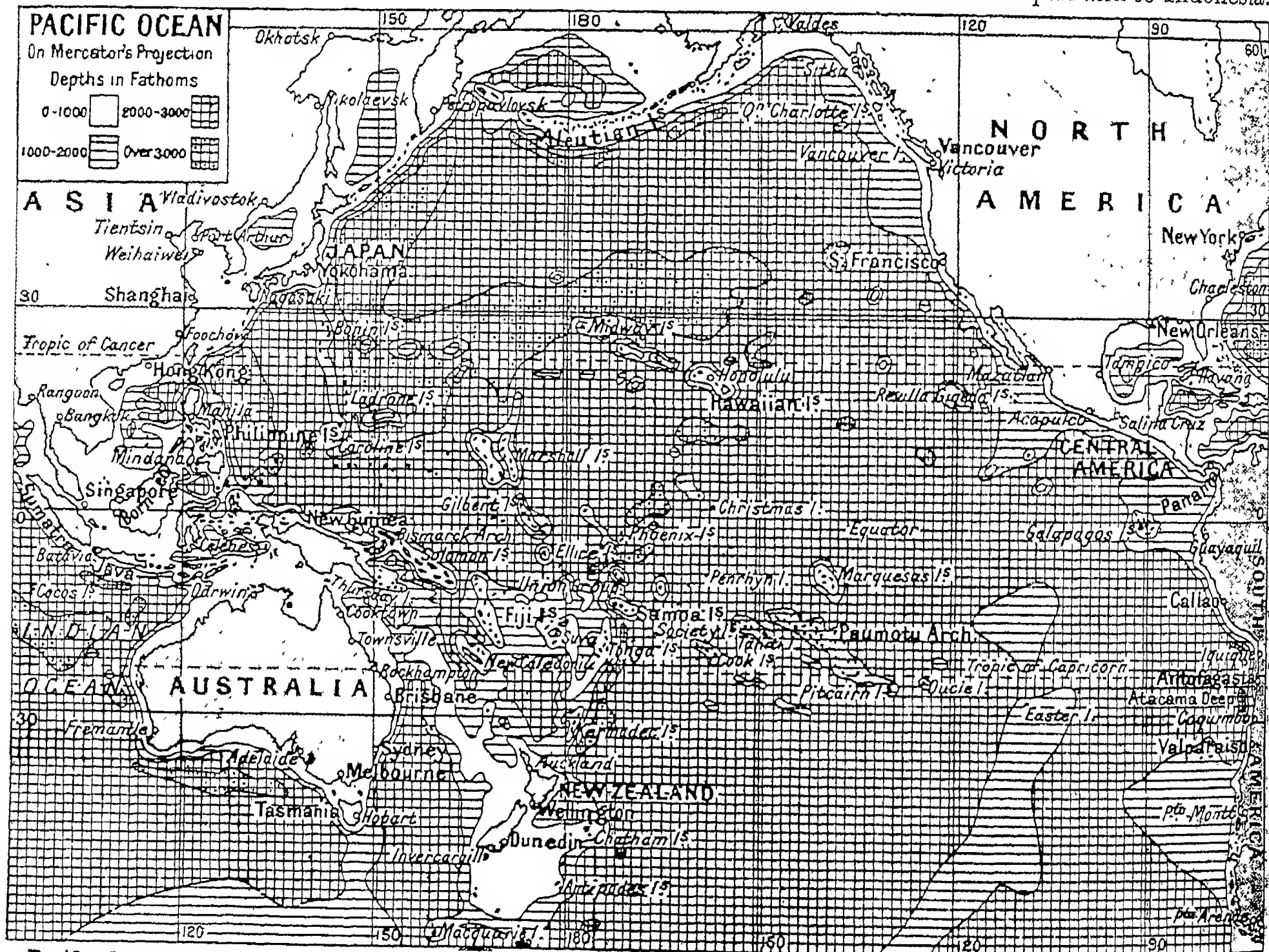
**Pachmarhi.** Hill station and sanatorium of the Deccan, India.

ungulate mammals having thick skins. See Ungulata.

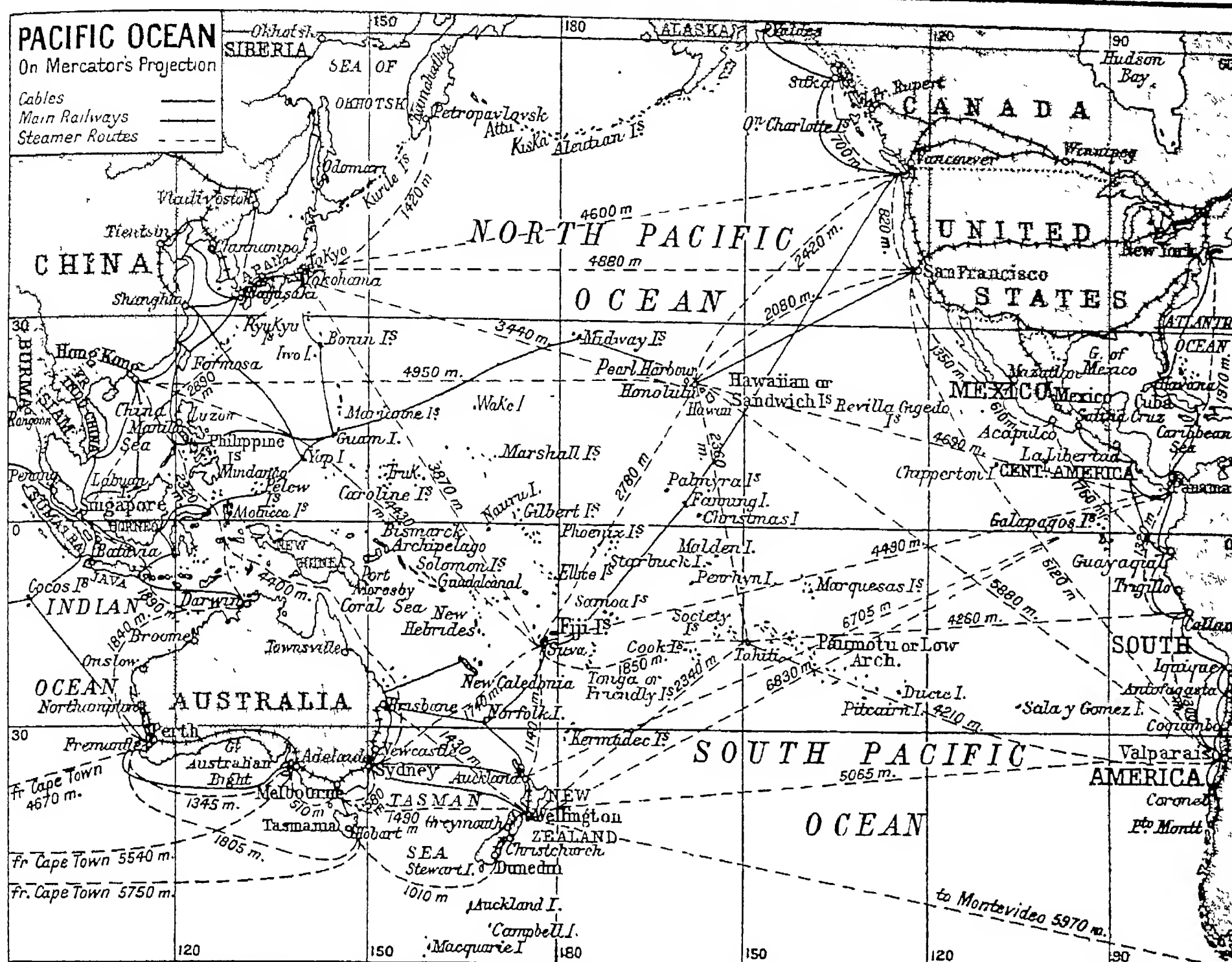
**Pacific, War of the.** For this war of 1879-83, see under Chile.

**Pacific Cable.** There are two submarine telegraph cables in the Pacific. One, a British cable of more than 16,650 nautical m. connecting Bamfield, Canada, via Fanning I. and Suva, Fiji, with Brisbane, Australia, and Auckland, N.Z., was laid in 1902 by the Pacific Cable board representing the govts. of the U.K., Canada, Australia, and N.Z. The two cables, between Bamfield and Fanning I.—3,470 nautical m.—are the world's longest sections of submarine cable. Landlines across Canada connect the system with British trans-Atlantic cables; across Australia with the Indian ocean cable system. The system passed in 1929 to Imperial and International Communications Ltd., renamed Cable and Wireless Ltd. in 1934, which was taken over by the British govt. in 1947.

The other cable, between San Francisco and Japan, touches Hawaii, Midway I., Guam, Manila, Shanghai to Japan by the Bonin Is. A branch line runs from Guam to Yap, whence lines radiate to Japan and to Indonesia.



Pacific Ocean. Map showing the varying depths of the ocean and the ridges on the ocean bed from which the majority of the South Sea islands rise



Pacific Ocean. Map showing the steamship routes and distances, and cables between Asia, Australasia, and America

Construction as far as Guam dates from 1903. The cable is owned by the Commercial Pacific Cable co. whose forerunners built up one of the Midway Is. out of an atoll. See Midway Islands.

**Pacific Fleet.** British fleet of the Second Great War. Based on Sydney, N.S.W., Australia, it included an Australian squadron. News of its formation was released Dec. 10, 1944, though the appearance of British warships in the Pacific had been announced from Tokyo in Nov. Its c.-in-c. was Admiral Sir Bruce Fraser, and his flagship H.M.S. Howe; other major units were the battleships King George V and Duke of York, the aircraft carriers Formidable and Illustrious. See Pacific War.

**Pacific Ocean.** The largest of the five oceans of the world. It extends over an area of some 64,000,000 sq. m. In the N. it is linked with the Arctic ocean through the narrow Bering St. between Alaska and Siberia, while to the S. it merges widely with Antarctic waters. The W. boundary separating it from the Indian ocean is a line running from the Malay pen. through Sumatra, Java, Australia (Cape Londonderry), Tasmania, and then along

the meridian of 147° E. to Antarctica. Its E. boundary is the W. seaboard of N. and S. America and a line drawn from Cape Horn to the S. Shetland Is. in Antarctica.

It is the deepest of the oceans, with a mean depth of about 2,300 fathoms. The sea floor of the Pacific is characterised by two large submarine elevations or ridges, a W. Pacific ridge composed of several shorter ridges, often rising above sea level to form groups or chains of islands and traceable from Japan to Antarctica, and an E. Pacific ridge running from Central America to the S. and W. and reaching Antarctica in the long. of New Zealand. These two ridges roughly divide the Pacific into a number of ocean basins. Particularly characteristic of the W. Pacific are deep depressions or trenches, most having a depth of more than 4,000 fathoms and occurring in regions which are centres of volcanic and seismic activity. Very great depths of water have been recorded in the W. Pacific, e.g. Nero deep off Guam I., 5,269 fathoms, a deep off Mindanao I., 5,348 fathoms, and a deep off Japan, 5,441 fathoms.

Within the tropical regions of the Pacific the great N. and S.

equatorial currents run E. following the line of the Equator; while the counter-equatorial current flows between them in the opposite direction. In the N.W. Pacific another warm current system, the Kuro Siwo, runs N.E. from Formosa, close to the Japanese coast, and then continues E. as the N. Pacific current. From the N. and S. the cold subarctic and subantarctic waters drift towards the equatorial region along the W. coasts of N. and S. America, the latter forming the Humboldt (or Peru oceanic) current.

Coral reefs and atolls abound in the shallower parts of the tropical Pacific wherever physical conditions, notably temp., favour their growth, e.g., the Great Barrier reef off Queensland.

**Pacific Star.** Campaign star awarded to personnel of the British armed forces who served in the Pacific ocean during the Second Great War. The bands of colour on the ribbon, from left to right, are; broad red, narrow dark blue, broad green, narrow yellow, broad green, narrow light blue, broad red. Entry into the operational zone was sufficient to qualify for the award. See Campaign Stars; Medal plate.



## THE PACIFIC WAR, 1941-45

Air Chief Marshal Sir Philip Joubert, K.C.B., D.S.O.

*An account from Pearl Harbour, Dec. 7, 1941, to Japan's surrender, Aug. 14, 1945, of hostilities in the Pacific Ocean area. Fuller details of some of the actions will be found under particular areas—see e.g. Iwo Jima; Leyte; New Guinea; Okinawa; Philippines. See also Burma Campaign, 1941-45.*

The Second Great War in the Pacific, which began on Dec. 7, 1941, with the attack by Japanese aircraft on the U.S. Hawaii naval base of Pearl Harbour, was in fact simply an extension of the campaign Japan was already waging against China, described in this work under China-Japan Conflict and Manchuria. Strategically the war situation in late 1941 looked most favourable to Japan's imperial ambitions. Great Britain was hard put to it to maintain her very existence owing to the intensity of the German submarine campaign; France was in German occupation; Russia appeared to be in extremis; and the U.S.A., not yet at war, was so weak in a military sense that the attack on Pearl Harbour put the U.S. fleet virtually out of commission for several months. Japanese occupation of Guam (Dec. 13), Wake I. (Dec. 23), and the Philippines followed rapidly, in spite of the gallant resistance of the U.S. garrisons, whose last stronghold in the Philippines, Corregidor, held out till May 6, 1942. On Dec. 8, 1941, the Japanese invaded Malaya; they sank H.M.S.S. Prince of Wales and Repulse on the 10th; Hong Kong fell to them on Christmas Day; by the end of Jan., 1942, they had seized Borneo, and had invaded Burma.

### Japanese Reach the Solomons

On Feb. 14, 1942, Sumatra was attacked; on the 15th Singapore fell; and on the 19th Darwin, in N. Australia, suffered its first air attack. In Java, invaded on the 28th, the Dutch surrendered March 9. The British evacuated Rangoon on March 7, and the whole of Burma by May 15. The Japanese attacked the islands flanking Australia's N. coast in Jan., seizing Rabaul in New Britain and Kavieng in New Ireland (both in the Bismarck archipelago) on Jan. 23. On March 8 they landed at Lae and Salamaua in New Guinea; on March 10 they landed at Buka in the Solomons.

But the war at sea was not going too well for them, and to achieve their ends, control of sea communications was essential. The battle of the Coral Sea, May 4-9, forced the Japanese to call off an

intended seaborne attack on Port Moresby in S. New Guinea; and the abortive attack on Midway, June 3-6 (which cost the Japanese 20 of their invasion fleet of 80 for the loss of the U.S. aircraft carrier Yorktown and one destroyer) marked the end of Japanese seaborne attack on new objectives in the S. Pacific. But they had now begun an advance northward; they seized Attu, June 13, and Kiska, June 21, in the Aleutians. Weather, difficulties of supply, and an unexpectedly vigorous reaction by U.S. forces drove them to surrender on Attu on May 29, 1943, on Kiska Aug. 15. For the rest of the war the Japanese did not get nearer to the American mainland than their own Kurile Is., which suffered frequent attack from the air during the later stages of the war.

### Australia Saved

Major naval operations against Port Moresby had become impossible, but that place was essential to the Japanese air force if it was to control the sea for an invasion of Australia. An attempt to take Port Moresby overland was held by the Australians, Sept. 15, only 32 m. from the town.

During the early summer of 1942 the Japanese had been busy constructing sea and air bases in New Guinea and the Solomons and bringing in troops; but while the Australians were still retreating in New Guinea, U.S. Marines on Aug. 7 began the first major Allied counter-offensive in the Pacific with landings on Tulagi, Guadalcanal, and other islands in the Solomons. The landings were a complete surprise, and initial resistance was weak; but during the night of the 8th-9th already Japanese naval forces engaged the Allied screening force off Savo I. and sank four heavy cruisers—the Australian Canberra and the U.S. ships Quincy, Vincennes, and Astoria; and although by Aug. 10 the U.S. forces were in effective control of the smaller islands, the fight for Guadalcanal was long and bitter.

By Jan. 23, 1943, the Australians had driven the Japanese out of Papua (British New Guinea), and by Feb. 10 Guadalcanal was free of the invader. It was not,

however, until June, 1944, that joint Australian and U.S. operations gave the Allies, despite isolated groups of Japanese in the interior, control of the whole of New Guinea. The capture of Biak I., May 27-June 20, 1944, in the Schouten Is. off N.W. New Guinea, marked an important point in the S.W. Pacific campaign, for it lies 860 m. from Darwin in Australia, and less than 800 m. from Mindanao in the Philippines. The capture of Morotai in the Moluccas followed, Sept. 14-17, 1944, the Japanese garrisons in the other Molucca Is. being bypassed. Further landings in the Solomons had secured New Georgia, Villa Lavella, and other islands during the summer; and from Nov., 1944, the Australians took over all operations in the S.W. Pacific, where fighting was to continue in Bougainville (Solomons), Borneo, and elsewhere until the surrender of Japan.

### Central Pacific Operations

While the advance in the S.W. Pacific was progressing towards the Philippines, decisive operations were developing in the central Pacific. The British Ellice Is. were never attacked by the Japanese, and during the winter of 1942-43 were developed as an advance Allied base for the "island-hopping" campaign which was being planned. Landing craft of a type designed as a result of experience on Guadalcanal began to arrive in the Pacific. Carrier-based air attacks on the Japanese-occupied British Gilbert Is. began in Aug., 1943, and continued until on Nov. 20 landings were made on Makin I., conquered next day, and on Betio I. in Tarawa atoll, conquered only after a violent three-day battle; but by the 25th, U.S. forces were in control of the Gilberts.

By the end of Dec. four airfields, three suitable for heavy bombers, had been developed, and the scale of U.S. shore- and carrier-based air attack against the Marshall Is. (under Japanese mandate) to the N. was steadily mounting. The Japanese air forces there had been doubled in strength, but they were unable to prevent this development, although they lost many aircraft in their attempts to do so. On Jan. 29, 1944, after raids on 20 consecutive days, the attack on the Marshalls began: 700 aircraft flying from 12 carriers bombed Kwajalein, Roi, Maloelap, Tarao, and Wotja simultaneously. By the evening, of the estimated

130 Japanese aircraft in the Marshalls, not one remained operational. The undefended Majuro atoll was seized Jan. 31; by Feb. 22 control of the Marshalls had passed to the U.S.A.

The U.S.A. now held anchorages and bases over 2,000 m. W. of Hawaii from which amphibious expeditions could be prepared, land areas on which airfields capable of accommodating every type of aircraft could be made, and submarine bases 1,300 m. nearer the enemy's trade routes than Midway, the former anchorage. Under this threat the Japanese reorganized their naval forces. Their first mobile fleet was withdrawn to Singapore or to home waters, the c.-in-c., Admiral Koga, remaining at Pelew with his flagship. The third fleet (the carrier force) reorganized into three divisions, one of which underwent training in the Singapore area, the other two in the Inland Sea, was re-assembled at Tawi Tawi off N. Borneo in May.

Fast Allied carrier forces carried out a series of raids over a wide area. For example, on March 29-31, a U.S. task force operating against the Pelew (or W. Carolines—under Japanese mandate) and neighbouring islands destroyed some 150 enemy aircraft and sank 100,000 tons of naval and merchant ships, including eight tankers, besides damaging shore installations. U.S. losses totalled 25 aircraft; no U.S. ship involved received any damage.

The steady progress of the Allies in the central and S.W. Pacific gave assurance of protection from serious interference by the enemy, in the next Allied advance, against the Marianne Is., which with the exception of Guam, a U.S. possession, had been mandated to Japan in 1919 and provided bases and airfields guarding communications between Japan and the Carolines, the Philippines, and other Japanese held territories. Landings in the Mariannes on June 15 were preceded by a heavy attack by sea and air forces. By Aug. 7 U.S. forces were in control of Saipan, Guam, and Tinian. Rota they bypassed. In Japan, the fall of Saipan on July 9 produced great alarm. The inner defensive line of the empire was now breached, and U.S. naval and air forces were bombarding and attacking the Bonin Is., part of the homeland itself. On July 18 Tojo, the prime minister, resigned, and a new govt.

was formed whose thoughts were turning towards peace. As yet, however, no open move to end the war was made.

The progress of the two-pronged Allied advance towards the Philippines—from the S.W. and from the central Pacific—had reached a point where the Carolines and Pelews were a dangerous salient between the two forces. Truk, the principal enemy base there, was under constant attack, but its reduction or neutralisation was the next move in the advance towards the Philippines and Japan itself. Attacks by land- and carrier-based aircraft on enemy aircraft and shipping from the Bonins to the Philippines produced weak enemy reaction on Mindanao. In the Visayan Is. in the central Philippines, over 600 aircraft and a number of merchant ships were destroyed. On Sept. 6 strong forces of carrier-based planes attacked the Pelew Is. preparatory to a landing on the 14th by U.S. Marines on Peleliu I. Babelthuap, largest of the Pelews, was bypassed; but by Oct. 1 U.S. forces were in possession of Peleliu and three other islands of the group and could dominate the whole of the Carolines. With the Mariannes, the Pelews, and the Moluccas under their control, the Americans were ready for their invasion of the Philippines.

#### Japan's Dwindling Resources

Japan's military strength was still considerable. Though she lacked air power, her army was numerous and her fleet strong. She could draw on Manchuria for army reinforcements. Her southern resources area was threatened; but essential supplies, including oil, were still reaching the homeland under cover of the Philippines, Formosa, and the inner island chain. Once she lost the Philippines, this slender thread of commerce would be snapped. If her fleet remained in the S. it would get oil, but no ammunition; if it based itself on the homeland ammunition would be available, but insufficient oil for prolonged operations. The Japanese naval staff decided on a gambler's throw in defence of the Philippines.

The U.S. campaign to recover the Philippines opened with concentrated attacks during Oct. by carrier-borne aircraft on targets in Mindanao and Luzon, the Ryukyu Is., and Formosa. On Oct. 14 and 15 China-based B.29 aircraft (Super-fortresses) also

struck at Formosa. The first attack on the Ryukyus on Oct. 9 was a complete surprise. Some thousand enemy aircraft were destroyed in these attacks for the loss of some 100 U.S. planes.

#### Allied Landing at Leyte

The air assault was switched to Leyte in the central Philippines 48 hrs. before a powerful U.S. force landed there on Oct. 20, instead of, as the Japanese had expected, on Mindanao, southernmost of the islands. The landing was the signal for the Japanese combined fleet, which had been avoiding action for two years, to challenge the Allied navies. The first diversion attack force, comprising the main battleship and cruiser strength, was ordered from Singapore to Brunei bay in Borneo, while the submarines were directed to Leyte. On the 18th, the second diversion attack force at Amami-o-Shima was ordered to the Pescadores off the W. of Formosa. The weakened carrier force, composed of four carriers partially equipped with aircraft, two carrier-battleships without any aircraft, three light cruisers, and ten destroyers, grandiloquently named the main body, sailed S. from the Inland sea.

The first reports of Japanese naval movements came Oct. 21 and 22 from U.S. submarines cruising off Borneo, Palawan, and Luzon, which sank two and damaged another of the heavy cruisers of the first diversion attack force. This, sailing from Brunei towards the central Philippines, split into two, one part moving through the Sulu sea, the other through the Sibuyan sea. U.S. carrier air attack on both parts began on the 23rd; in the Sibuyan sea, damage caused compelled the enemy to retire to the westward. Meanwhile the Japanese shore-based aircraft attacked the U.S. carriers in strength, sinking the Princeton (10,000 tons). On the night of the 23rd-24th, the force from the Sulu sea attempted to pass through the Surigao straits; in the ensuing action U.S. surface forces sank two battleships and three destroyers; only one damaged cruiser and a destroyer escaped, the cruiser to be sunk by aircraft the next morning.

The second diversion attack force, which was following in support, delivered an abortive attack, in which the flagship and a cruiser suffered damage, and then withdrew. Meanwhile the U.S. carrier force, steaming N. at high speed, intercepted the main



body on Oct. 24, and sank all four carriers and two other ships without damage to one U.S. ship. The part of the first diversion attack force which had withdrawn westward under air attack advanced again and, despite its losses in the Sibuyan sea, passed through the San Bernardino strait (between Luzon and Samar). It then turned S. and off Samar encountered a group of U.S. escort carriers and destroyers. In the ensuing action most of the Japanese heavy ships were badly damaged, two cruisers were sunk, and a destroyer was left adrift. The Japanese retired to the Sibuyan sea, where they were again heavily attacked next day. During this phase of the battle Japan's newest battleship, the 42,000 ton Musashi, was sunk, as well as three destroyers. Three more cruisers which escaped were sunk later by attack from the air.

The most decisive sea battle of the Second Great War was over, and the Japanese fleet had virtually ceased to exist as a fighting force. The gambler's throw had failed. But the U.S. naval forces had taken a hammering during the battle and after by attacks from aircraft in charge of *kamikaze* (suicide) pilots.

The Leyte landing meanwhile was making slow progress against fanatical opposition; but by Dec. 25 organized resistance in the island ceased. In her attempts to reinforce Leyte, Japan lost 164,000 tons of shipping. On Dec. 15 U.S. troops made an almost unopposed landing on Mindoro I. at a point only 75 m. S. of Manila. Enemy resistance was quelled by the 29th. The Philippines had been virtually cut in two, and the U.S. forces were ready for their attack on Luzon. They landed in Lingayen gulf under MacArthur's personal command on Jan. 9, 1945; on Feb. 4 they reached Manila without fighting another battle. By the 6th the city was under U.S. control, except for the ancient walled city, Intramuros, across the Pasig river, where the Japanese fought suicidally until the 24th. Bataan was overrun and Corregidor seized on the 16th. The U.S. forces now dominated the Philippines once more (although isolated groups were still fighting in Mindanao and the Luzon mts. when Japan surrendered), and Japan was cut off from her short-lived empire in the S.

The hoped-for China-based air assault by B.29 aircraft had been greatly hampered by the Japanese

advance towards Yunnan in 1944 which deprived the U.S. air forces in China of seven valuable and well-developed airfields (*v.i.*). Moreover the difficulties of maintaining General Wedemeyer's striking force in China from E. Bengal had proved greater than had been anticipated. The Ledo road was not completed until Jan. 23, 1945; the oil pipe line from Calcutta was still being laid; and supplies carried by air across the mts. of N.E. Burma were inadequate.

#### British Fleet in Pacific

The build-up for the final Allied assault was, however, proceeding apace. A British Pacific fleet based on Australia was formed in Dec., 1944, to serve under the U.S. naval c.-in-c. or, where appropriate, Gen. MacArthur; and a British E. Indies squadron based on Colombo operated against positions in the Japanese-occupied Andamans and Netherlands E. Indies, while its submarines took toll of Japanese shipping in the Malacca strait. As the German naval threat diminished, British first-line war vessels and a vast train of merchant ships were transferred to Pacific waters, where the fleet took part in a number of attacks in support of the main drive towards Japan.

Iwo Jima was selected as the point for a landing in the Bonin Is. Japanese fighters operating from its airfields were intercepting B.29 bombers in passage from their base in the Mariannes. Moreover possession of those airfields, which were within fighter range of the Japanese mainland, would mean that bombers raiding that mainland could be given fighter support, and could in emergency land at Iwo Jima on their return journey. The landing, made on Feb. 19, 1945, after a fierce three-day bombardment to which the enemy had scarcely replied, met much stiffer opposition than had been anticipated; but organized resistance ceased on March 16.

Ten days later U.S. forces landed on the Kerama Retto, a group of islets almost in the centre of the long chain of the Ryukyu Is., which lie between the Japanese mainland and Formosa, and are a part of Japan proper. Landings on Okinawa, key island of the group, began on April 1, after a tremendous preliminary bombardment. This was the largest amphibious operation attempted in the Pacific: 1,200 ships, 560 carrier-borne aircraft, and nearly half a million troops took part directly in the operation. The U.S. fast carrier force (80 ships and 900

aircraft), the British carrier force (20 ships and 250 aircraft), the 21st bomber command U.S.A.A.F., and the Far East air force acted in support.

Japanese naval reaction to the landings began in the evening of April 6 when a force described by Tokyo radio as a suicide force and composed of the 45,000 ton battleship Yamato, the light cruiser Yahagi, and eight destroyers—the poor remnant of the first diversion attack force—left the Inland sea to intercept the Okinawa landings. Next morning it was located by air reconnaissance, and at mid-day the U.S. fast carrier force attacked some 50 m. off Kyushu. At 14.23 the Yamato capsized and blew up; the cruiser and four destroyers were sunk. The remaining destroyers, after suffering damage, fled back to Sasebo; 380 U.S. aircraft took part in this attack, of which 10 were lost from A.A. gunfire. There had been no air opposition.

The battle for Okinawa proved the toughest in the Pacific. By his incredible fanaticism the Japanese soldier held out until June 21 against an invader who held absolute command of the air, had the equivalent of two armoured divs., an overwhelming strength in artillery plus the powerful guns of the combined Allied fleet, and an unlimited superiority in men, equipment, and supply.

#### Bombardment of Japan

After the fall of Okinawa, from sea and air the Allies showered blows on Japan itself. The first naval bombardment of the Japanese mainland came on July 14, when Kamaishi, port and industrial centre 275 m. N.E. of Tokyo, was shelled without response. Both before and during the bombardment some thousand carrier-borne aircraft ranged over a wide area of N. Honshu and Hokkaido, meeting no opposition. Next day Muroran was blasted from 1,000 yds. range. The heaviest naval bombardment of the war was carried out on the 17th by a combined U.S. and British fleet against a 70 m. stretch of the Honshu coast N. of Tokyo. Battleships approached within 24 m., cruisers and destroyers steamed close inshore. More than 2,000 tons of shells were poured into the industrial centres in the area. Bombardments by day and by night were frequent until a last one, on the Kuriles, on Aug. 13.

The first air attack on Japan was delivered on April 18, 1942, when Tokyo was bombed by air-

craft led by Col. Doolittle (*q.v.*) from the U.S. carrier *Hornet*. On June 15, 1944, came the first attack on Japan by land-based aircraft when B.29 bombers of the U.S. 20th A.A.F., flying from bases in China, bombed Yawata steelworks; it was followed by other raids on industrial and naval targets on July 7 and 29, Aug. 10 and 20, Oct. 25, Nov. 11 and 21, after which this U.S. air force had to retire to India owing to the Japanese advance in China. But by then a B.29 base had been established on Saipan in the Mariannes, and on Nov. 24 Tokyo had its second raid of the war, the first of a series of mounting strength on both the capital and great industrial centres such as Yokohama, Nagoya, Osaka, and Kobe. Carrier-borne aircraft joined in the assault, on July 24 and 28, 1945, for instance, attacking two battleships, three carriers, and five cruisers and other vessels, all sunk or severely damaged. On July 27 B.29 aircraft dropped leaflets on eleven towns—centres of war production or transport—warning them that they would be targets for heavy air attacks; six were bombed the next day. By Aug. 5, 31 towns had been warned, and ten of them heavily bombed.

On Aug. 6 the first atomic bomb was dropped on Hiroshima (*q.v.*); on Aug. 9 the second on Nagasaki. Japan could no longer hold out. If the dropping of the atomic bombs did not bring about Japan's final downfall, they gave her rulers, in a situation so desperate that in all probability surrender could not in any case have been long delayed, a reason for accepting on Aug. 14 the full Allied terms of surrender.

**Pacifism**, or **PACIFICISM**. Attitude which rejects war, even to the extent of rejecting active or material resistance to aggression. It goes back to such medieval attempts at replacing warfare by international law as the *treuga Dei*, and the plans for a union of nations made by King Podiebrad of Bohemia and Henry IV of France and his chancellor Sully. It is a fundamental of the Quaker and Mennonite religious systems and is based by these bodies on their reading of the N.T. The first peace society, founded in London, 1816, was soon followed by an American one. A French society was founded 1867 and a number of societies were formed in many parts of the world from then on. Victor Hugo (France), Cobden, W. T. Stead (U.K.), Bertha von Suttner (Aus-

tria), Alfred H. Fried (Germany) were among active advocates of peace. The creation of the Nobel peace prize, 1896; the world peace conferences, the first of which assembled in Paris, 1889, and established 1891 the international peace bureau in Berne (moved 1919 to Geneva); and Carnegie's peace endowment, 1910, fostered these movements.

While membership of peace societies was small, the indirect influence of pacifism has been considerable. During the First Great War the right of a man to object on grounds of conscience to participating in war was officially recognized in the U.K. The setting up of the League of Nations and of The Hague international courts seemed to mark the attainment of the aims of the pacifists. German generals, *e.g.* von Schönaich and von Deimling, and professors, *e.g.* F. W. Förster and L. Quidde, Victor Basch and d'Estournelles de Constant in France, La Fontaine in Belgium, and numerous R.C. leaders, *e.g.* Marc Sangnier, encouraged by papal encyclicals, proclaimed active pacifism.

The Geneva Protocol, 1924, the Kellogg Pact, 1928, and various disarmament conferences were attempts to establish a practical and international pacifism. In 1928 a war resisters' international was formed; and in 1936 an international peace campaign was organized to coordinate pacifism through the League of Nations.

Pacifism (as distinct from the common longing for peace) has been strongest in countries such as Great Britain and the U.S.A., where the general acceptance of a right to freedom of belief leads to the acceptance, even if reluctantly, of conscientious objection to military service as to other social usages. In dictatorships pacifism has been condemned and its supporters persecuted. See Conscientious Objector; International Law; Kellogg Pact; League of Nations; Peace Pledge Union, etc.

**Packfong** or **PAKTONG** (Chinese *pai-t'ung*, white copper). Alloy of nickel-silver type, used for many centuries by the Chinese for tableware and ornamental work. It was probably made by mixing the product of smelting nickeliforous copper ores with that of smelting zinc ores. Its composition was: nickel, 32–41 p.c.; copper, 26–40 p.c.; zinc, 16–37 p.c.; iron, 0–2.6 p.c.

**Pack-horse**. Horse employed in the carriage of goods. This method of transport is common

where the roads are not available for wheeled traffic, especially in mountain districts. In Great Britain pack-horses remained in use until the 18th century, especially for carrying wool.

**Pactolus**. Ancient brook in Lydia, famous for the gold found in its sands in classical times. It is believed to be the modern Sarabat (*q.v.*).

**Padang**. Town and seaport of Sumatra, Indonesia. Situated nearly in the middle of the W. coast, it is the terminus of a rly. line to the interior, and has considerable trade from the neighbouring highlands and islands. The harbour is 3 m. S. of Emma-haven, which supplies coal from the Ombilin coalfield. Coffee, copra, tobacco, gum, and hides are exported. Pop. 51,976. Together with its harbour, it was the object of a number of attacks by British carrier-borne aircraft in 1944 and 1945 while Sumatra was in Japanese occupation.

**Padaung**. Township of Burma, in the Prome dist. The town is principally one long street along the right bank of the Irawadi on the road from Prome into Arakan. Pop. 57,500. See Burma.

**Paddington**. Met. bor. of the co. of London. Between Marylebone and Kensington, it is intersected by the Harrow Road and a branch of the Grand Union Canal. It includes Paddington station, completed in 1856 as the terminus of the old G.W.R.,



Paddington arms

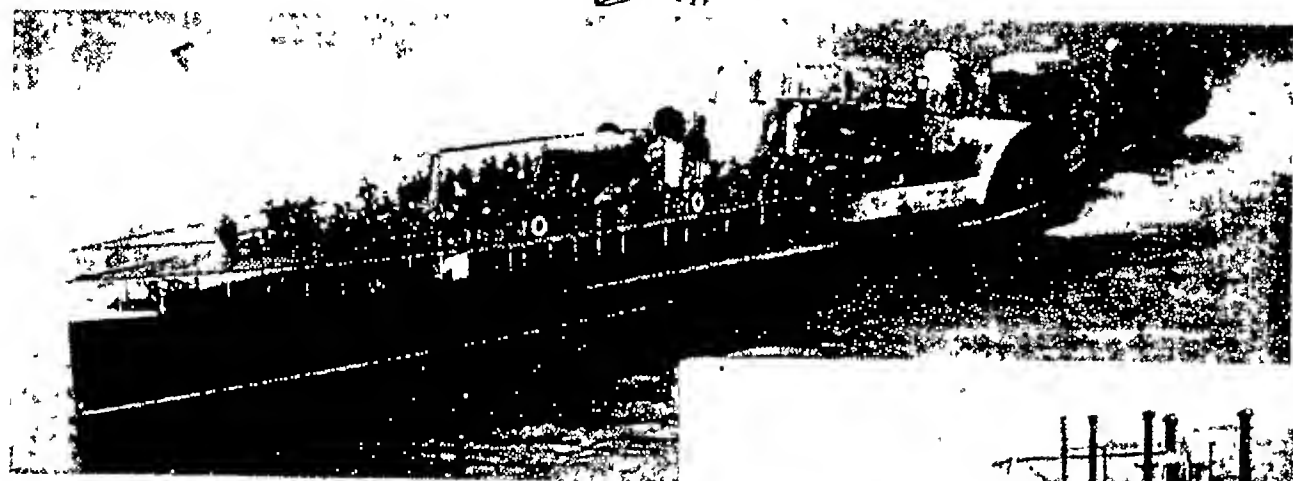
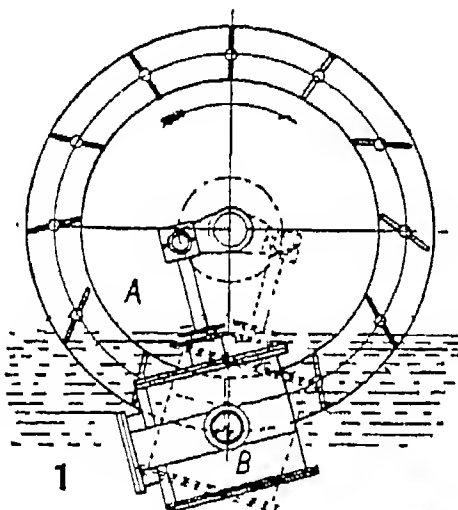
and the districts of Maida Vale and Bayswater, with the busy shopping centre of Westbourne Grove, named after the Westbourne stream, which was used to form the Serpentine (*q.v.*). In addition to the town hall, enlarged in 1906, the borough contains S. Mary's, founded 1845, and Paddington hospitals; public libraries, municipal baths, and a technical institute. In the churchyard of S. Mary's, Paddington Green—the parish church 1788–1845, after which it was superseded by S. James's—are the graves of Sarah Siddons, Benjamin Haydon, and Joseph Nollekens. Westbourne Park Baptist chapel is associated with the work of Dr. Clifford.

The open spaces include a recreation ground of 27 acres, and the old cemetery of S. George's, Hanover Square, in which Sterne was buried and from which his



body is said to have been exhumed by body-snatchers. Notable residents of Paddington have included, in addition to Sarah Siddons, Robert Stephenson, Browning, the 1st Baron Coleridge, J. O. Hobbes, Herbert Spencer, and Sir Rowland Hill. The manor, anciently attached to Westminster Abbey, was given by Edward VI to the bishops of London, an episcopal connexion recalled by the names of several thoroughfares, *e.g.* Bishop's Bridge Road. Paddington forms two bor. constituencies. Pop. (1951) 125,281.

**Paddle Steamer.** Vessel driven by paddle wheels. The first steam vessels were propelled by paddles, which are still in wide use for river, channel, and lake steamers, particularly where the water is comparatively shallow. Two systems of paddles are known; in one the paddles or blades are rigidly attached to the framework of the

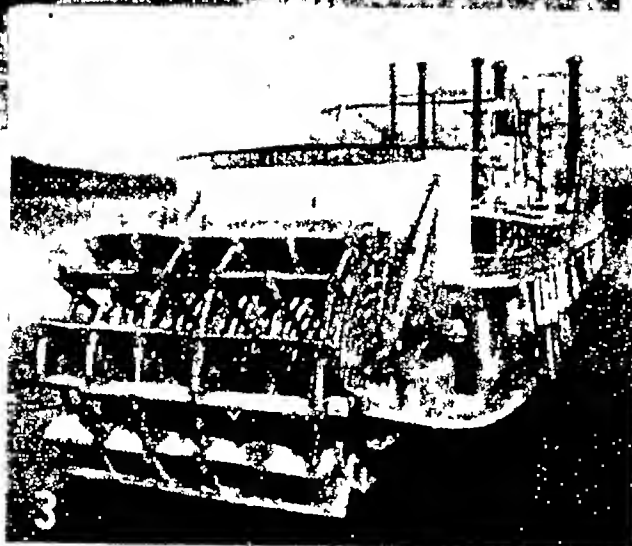


wheel; in the other the blades are free to turn through a certain angle and are operated by eccentric gear, as the wheel turns round, in such a way as to imitate in effect the feathering of an oar. They are known as feathering wheels. Special steamers have been built with a single, wide paddle wheel placed at the stern, for use in rivers where very shallow water occurs.

**Paddy** (Malay *padi*, rice). Rice in the husk. Paddy is the form used throughout the East, but in America it is known as baddy. Fields of growing rice, and very low-lying fields, are called paddy fields. The Java sparrow, which feeds on rice, is called the paddy bird, and a paddy pounder is a machine for husking rice. *See* Rice.

**Paderborn.** German town in N. Rhine-Westphalia. It stands at the source of the Pader, 50 m. by rly. S.W. of Hanover. One of the oldest German cities, it was a bishopric under Charlemagne, and

the seat of his diet in 777. Partly rebuilt after fire in 1875, it was devastated by bombs in the Second Great War. The cathedral, evolved upon Charlemagne's foundations in the 11th to 13th centuries, was not irreparably damaged, nor was the S. Bartholomew chapel of the same period; but the town hall (1416) and the Franciscan and Jesuit churches were lost. Paderborn is the seat of an archbishop, has a philosophical and theological academy, sanatoria connected with its alkaline spa, and cement, printing, and engineering industries. A Hanseatic town from 1295 and capital of an ecclesiastical principality, it passed in 1813 to Prussia. Armoured units of the U.S. 1st army overcame S.S. troops with tank support here in desperate fighting March 30–April 2, 1945, in the course of operations to isolate the Ruhr. Pop. (1939) 37,272.



**Paddle Steamer.** 1. Diagram of oscillating engine directly connected with crank, A, on paddle-wheel shaft, thus driving feathering wheel. Engine cylinder, B, oscillates on centre trunnion, as shown by dotted lines. 2. A pleasure paddle steamer. 3. Stern wheel steamer

**Paderewski, Ignaz Jan** (1860–1941). Polish pianist and statesman. Son of a farmer, he was born at Kwrylowka, Russian Poland, Nov. 18 (6, o.s.), 1860. He showed exceptional musical gifts, and studied at the Warsaw conservatoire (where he became professor at 18) and with Leschetizky in Vienna. A teacher at Strasbourg, he did not appear as soloist until he was 27; he made

his début in Vienna, 1887, came to London 1890, and next year achieved sensational European success. Romantic appearance as well as unfamiliar technique placed him in the front rank of pianists, and he made repeated tours of Europe and the U.S.A. His position as composer was established by an opera, *Manru*, 1901. Some of his other works were the popular minuet in G, symphony in B minor, songs, and pianoforte pieces.

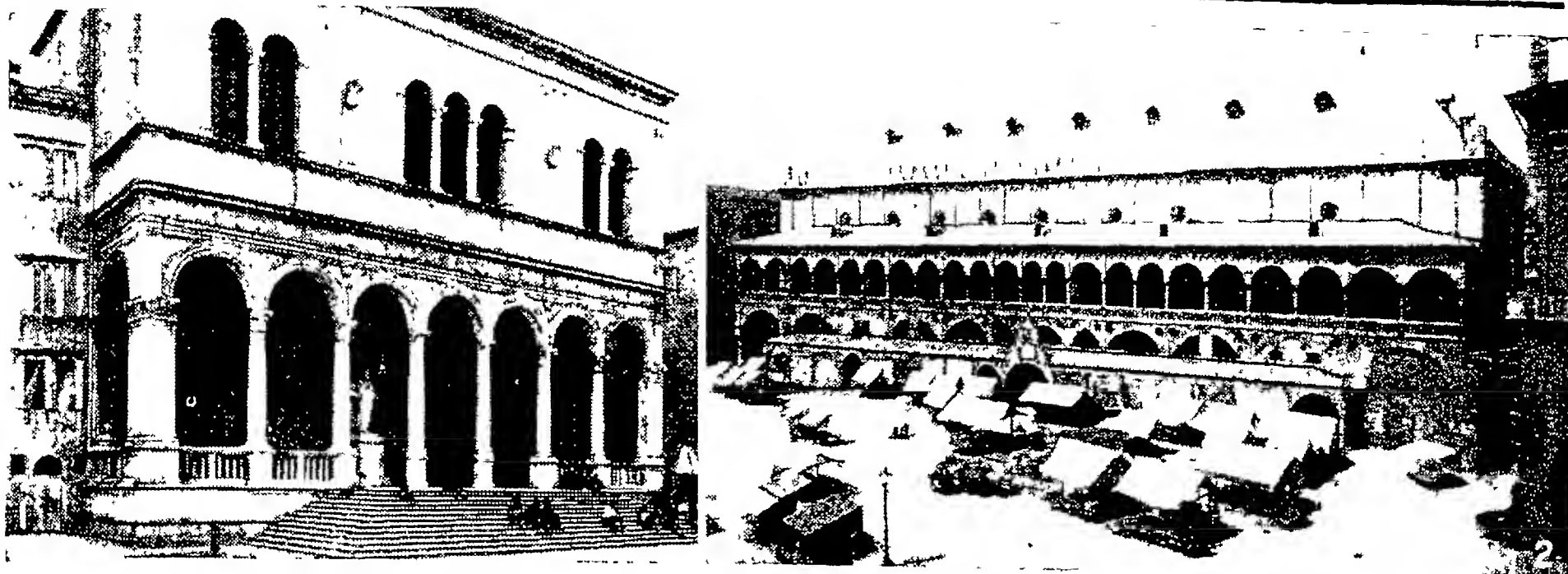


**Ignaz Jan Paderewski,**  
Polish pianist

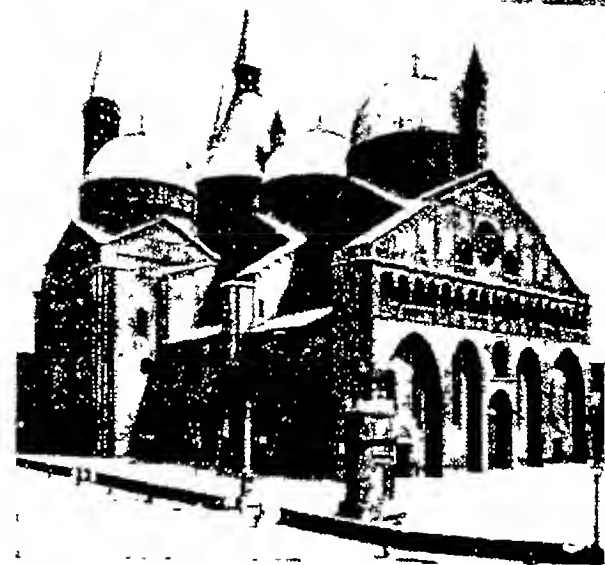
Ardently patriotic, he flung himself into charitable work on behalf of Polish victims of the First Great War. In 1916 he lectured on Polish history in the U.S.A., and when that country declared war he organized the training of Poles in Canada. He sought help in the U.K. in constituting the new Polish state, of which he was premier and foreign minister in 1919, signing the Versailles treaty. In opposition to Pilsudski, his government was defeated and, retiring from politics, he went to Switzerland and eventually California, and resumed his musical career. He reappeared to give recitals in England, 1925 and 1933, and in 1936 was in a film, *Moonlight Sonata*. When the Polish govt. was driven into exile in 1939, Paderewski, then living in the U.S.A., helped to raise funds and recruits for the Polish forces. He died June 29, 1941.

His art was a reflection of his highly emotional temperament, but brilliant technique placed it above the merely spectacular. As a politician he displayed energy and qualities of leadership just when they were demanded. He was knighted in 1925 for services to the British Legion, but did not use the title. There are lives by C. Phillips and R. Landau, both 1934; and the Paderewski Memoirs were edited by M. Lawton, 1939.

**Padiham.** Urban district, formerly a market town, of Lancashire, England. It stands on the Calder, 3 m. N.W. of Burnley. The chief building is S. Leonard's church, an old foundation rebuilt in the 19th century. The industries include the manufacture of cotton and other fabrics, engineering, and making of domestic gas appliances, etc. The population in 1951 was 10,041.



Padua, Italy. 1. Loggia del Consiglio, an early Renaissance building. 2. Market place and Palazzo della Ragione. 3. The church of Sant' Antonio and Donatello's statue of Gattamelata



**Padilla**, JUAN DE (c. 1490–1521). Spanish insurgent. Born at Toledo, he entered the army as a youth, and in 1518 placed himself at the head of a popular movement against the subsidy granted by the cortes to Charles V. With a considerable body of armed men he seized Joanna, the king's mother, and with his insurgent army marched to Valladolid, but despite various successes he was defeated at Villalar, made prisoner, and executed, April 23, 1521.

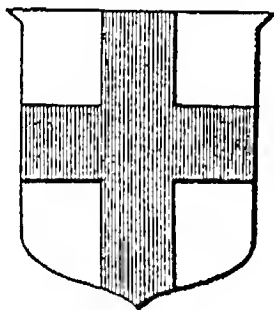
**Padishah**. Eastern title. It has been applied to the shah of Persia, the sultan of Turkey as ruler of the Ottoman Empire, the Great Mogul, by Indian natives to the sovereign of Great Britain as emperor of India, and by Orientals generally to European monarchs. The Persian *padshah* signifies lord king.

**Padstow**. Urban dist., town, and seaport of Cornwall, England. It stands on the N. coast, near the estuary of the Camel, 15 m. N.W. of Bodmin, and is served by rly. The church of S. Petrock is an old building, and S. Enodoc's church has a Norman font. Padstow has a little shipping and fishing, and a trade in agricultural produce. It is also a pleasure resort. There was a monastery at Padstow, its foundation being ascribed to S. Petrock. The name is a corruption of Petrock's Stow. Market day, Sat. Pop. (1951) 2,852.

**Padua** (Ital. Padova). Prov. of Italy, in the N.E., in Veneto. It forms part of the Venetian plain and is crossed by the Adige, Brenta, and Bacchiglione. Wheat, rice, wine, and silk are produced.

**Padua** (Ital. Padova). City of Italy. It stands on several branches of the Bacchiglione, just above its confluence with the Brenta, 22 m. W. of Venice, for which it is the rly. junction. A

triangular walled city, it occupies a strategic position of the Venetian plain. In ancient days it was the chief town of Venetia, was the birthplace of Livy, and was sacked by Alaric and Attila. Nearly all the ancient monuments have disappeared. The university, founded in 1222, was a famous institution in the Middle Ages. Many streets are bordered by arcades; the Renaissance cathedral and the 13th century church of Sant' Antonio, before which



Padua arms

stands Donatello's equestrian statue of Gattamelata, the soldier of fortune, are notable. The Madonna dell' Arena contains frescoes by Giotto and Mantegna. Padua has some manufactures and a trade in agricultural produce.

All but two of the frescoes by Mantegna in the Eremitani church were lost when that building was destroyed by bombing from the air March 11, 1944. This was probably the greatest single loss to Italian art during the Second Great War. Pop. (1951) 172,692.

**Paducah**. City of Kentucky, U.S.A., the co. seat of McCracken co. A port of entry and headquarters for coal barge shipments on the Mississippi, it stands at the junction of the Tennessee and Ohio rivers, 170 m. S.E. of St. Louis, and is served by rlys. and river steamers. It is a leading tobacco and strawberry market. Pop. (1950) 32,828.

**Paean**. In ancient Greece, name for a hymn. Originally a hymn of supplication against plague, so called from Paean or Paeon, a god of healing, sometimes identified with Apollo, the

paean became a song of thanksgiving, used at festivals of Apollo.

**Paeligni**. Tribe occupying the Apennine uplands east of Lake Fucinus during the early Roman age. Their ethnic origin and primitive culture resembled those of the Marsi (*q.v.*), in whose war (91–89 B.C.) they shared, establishing in their fastness Corfinium, a short-lived republican capital.

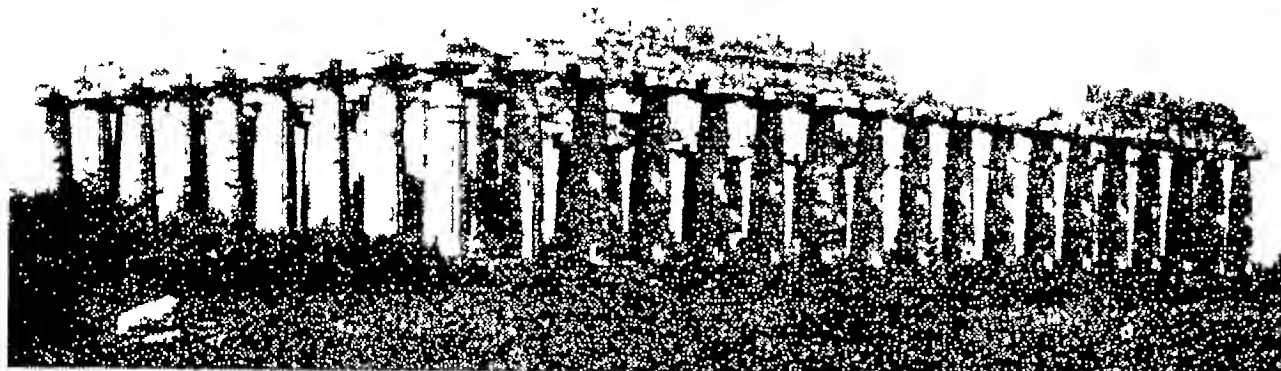
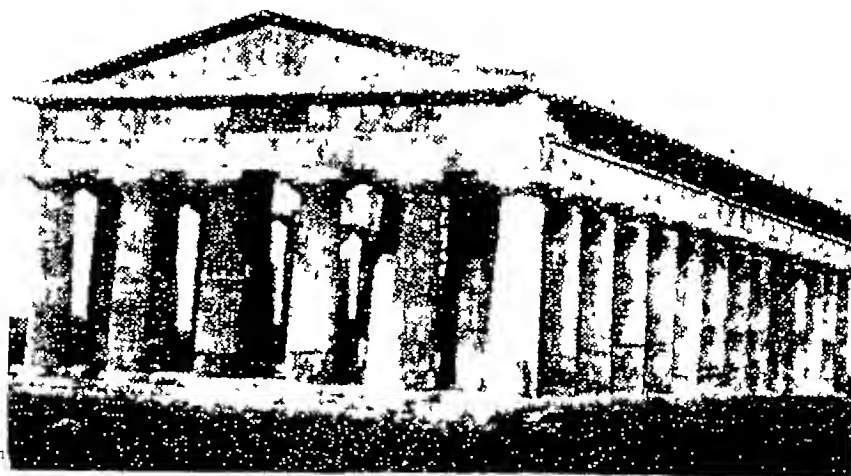
**Paestum**. Ancient city of Italy on the Gulf of Salerno, 24 m. S.S.E. of Salerno. Founded by Greeks from Sybaris c. 600 B.C. and called Poseidonia, it came under Lucanian influence after c. 400 B.C. Rome subdued it in 273 and made it the colony of Paestum. In the time of Augustus its roses were famous. It was plundered by the Saracens and abandoned in the 9th century A.D.

Considerable portions of the town and walls of Paestum have been excavated. Its most famous buildings are its three fine Doric temples, among the best-preserved of all Greek temples, the so-called Basilica, c. 550 B.C., the 5th-century "temple of Neptune," and the "temple of Ceres" built a little later than the Basilica. The first two are now known to have been dedicated to Hera Argiva, the third to Athena; at least eleven other temples and shrines have been discovered in their neighbourhood. With the spread of deep ploughing after the Second Great War many un-



touched tombs were discovered most of them of the 4th century B.C. Paintings in them are specially interesting since they help to fill the gap between Etruscan and Pompeian art.

**Pagan.** Term synonymous with heathen. In classical Latin *pagani*, i.e. inhabitants of *pagi* or villages, who might be employed for occasional military service, were con-



Paestum. Ruins of the ancient Greek colony in southern Italy; top, the so-called "temple of Neptune," an example of 5th-century B.C. architecture; below, the so-called Basilica, dating from the 6th century B.C.

trasted with *milites* or professional soldiers. When the Christians were described as soldiers of the faith, the indifferent masses were regarded as civilians or non-combatants. Hence the term pagan was applied to all non-Christians, except Jews and Mahomedans, who were at first considered an heretical sect. In the Middle Ages the term Paynim, through Old French from Lat. *paganismus*, was applied indifferently to heathen and Mahomedans, falsely thought to be idolators. See Gentiles.

**Pagan.** Township of Upper Burma, in Myingyan dist. It is situated on the left bank of the Irawadi, at the N. end of the Pegu Mts. Until the end of the 13th century Pagan was the capital and a fine city with numerous pagodas; it is now almost deserted, although a new township has grown up near by. Here on Feb. 14, 1945, British troops crossed the Irawadi and liberated Pagan intact.

**Paganini, NICOLÒ (1784-1840).** Italian violinist. Born at Genoa, Feb. 18, 1784, he made his first public appearance when nine years of age. The development of his unique gifts as a violinist was largely due to his own efforts. He left his home in 1798 and began a wandering career, gaining fame as a violinist of extraordinary powers. In 1828 he extended his tours beyond Italy, visiting Vienna, Berlin, Paris, and England.



Niccolò Paganini,  
Italian violinist

In 1833 he returned to Paris. He died at Nice, May 27, 1840.

His weird appearance, dissolute youth, powers as an executant, and methods of bewildering musicians reveal him not only as a genius, but also as something of a charlatan, and this combination of qualities has given rise to many extravagant stories about him. He composed pieces for the violin, including some caprices which have been arranged for the piano by both Schumann and Liszt. Brahms wrote variations for piano and Rachmaninov a rhapsody for piano and orchestra on a theme of Paganini. Consult Life, J. Pulver, 1936; The Condemnation of P., A. Vinogradou, 1946.

**Page.** In feudal times, a youth of gentle birth in training for esquireship and knighthood, who acted as assistant to an esquire in attendance on a knight and his lady. Pages were trained in arms, armory (or heraldry), and the amenities of life, including the chase, music, and dancing, also receiving such instruction in the Humanities as was deemed necessary for persons of gentle birth. The order survives in the pages of honour attached to European courts, youths who are trained at the expense of the sovereign, are allotted certain duties, and are usually given commissions in the household regiments or sovereign's bodyguard. In the U.K. the sovereign has his pages-in-waiting. In hotels and large private houses young male attendants called pages are employed on light duties. In the U.S. senate and house of representatives the attendants are known as pages. See Feudalism.

**Page, SIR EARLE CHRISTMAS GRAFTON** (b. 1880). Australian statesman. Born in Grafton, New South Wales, Aug. 8, 1880, he studied at Sydney high school and university, and became a surgeon. During the First Great War he served in France and Egypt. He was elected to the Australian

parliament in 1919, and was Commonwealth treasurer, 1923-29; minister of Commerce and deputy prime minister, 1934-39; and minister of Health, 1937-38. Leader of the Country party, he was on four occasions acting prime minister. On the sudden death of J. A. Lyons, April 7, 1939, he became prime minister, but a fortnight later resigned in favour of R. G. Menzies. In Sept., 1939, he resigned the leadership of his party, being opposed to cooperation with



Sir Earle Page,  
Australian statesman

the United Australia party in a national government under Menzies's premiership; but he joined the national government, Oct. 27, 1940, as minister of Commerce. In 1941-42 he was special Australian envoy to the British war cabinet, and in 1942-43 a member of the Australian war cabinet. He was minister of health in the coalition govt. of 1949. A privy councillor in 1929, he was created G.C.M.G. in 1938 and C.H. in 1942.

**Page, SIR FREDERICK HANDLEY** (b. 1885). British aeroplane designer. Born at Cheltenham, he was trained as an electrical engineer, and in 1906 began experimenting in aeronautics. He built a number of gliders to test his theories, and in June, 1909, established the first aircraft factory in the U.K., the same year producing his first aeroplane, the monoplane Bluebird. In 1912 he opened a factory at Cricklewood. In 1915 he put into production the first twin-engined bomber, since when his firm has specialised in the heavy multi-engined aircraft. After the First Great War he turned to civil aviation and designed a 20-seater aeroplane with which he inaugurated the London-Paris service in May, 1919. With the merging of Handley Page Transport into Imperial Airways in 1924, Page

began the design of multi-engined aircraft for the Imperial routes.

In 1927 Page greatly advanced aircraft safety and manoeuvrability by inventing the slotting wing, now standard on most aircraft. His contributions to aerodynamical design and efficiency placed him in the front rank of aeronautical science. During the Second Great War, when his company owned an experimental aerodrome at Radlett, Herts, there were produced large numbers of heavy bombers including the Hampden, Hereford, and Halifax, over 6,000 of the last-named being used by the R.A.F. Vice-chairman of the air registration board since 1937, Sir F. H. Page was president of the Royal Aeronautical Society, 1945-47. He was knighted 1942. *See Aeroplane.*

**Page, WALTER HINES** (1855-1918). American editor and diplomatist. Born at Cary, N. Carolina, Aug. 15, 1855, he was educated at Randolph-Mason College, Va., and at Johns Hopkins university. After seven years in control of *The Forum*, he became in 1898 editor of the *Atlantic Monthly*, and in 1900 founded *The World's Work*, issued by the publishing firm of Doubleday, Page and Co., in which he was a partner. He edited it until 1913, when he was appointed ambassador to Great Britain. During the period of American neutrality in the First Great War his enthusiasm for the Allied cause brought him into frequent conflict with President Wilson, but he remained at his post until Aug., 1918, when failing health compelled his retirement. He died at Pinehurst, N. Carolina, Dec. 21, 1918.

**Pageant.** A word originally meaning the stand on which mysteries and other dramatic performances were given. Gradually it was extended to the performance, and has been used to describe an unusual display, especially one in which a sequence of many scenes or episodes on a large spectacular scale treat a single broad theme, with a final tableau and grand march past. Open-air pageants of local history, presented lavishly with enormous casts, were a fashionable summer entertainment in the ten years immediately preceding the First Great War.

**Paget.** Famous English family. Its first prominent member was William Paget, an official of the city of London, who lived about 1500. His eldest son, William Paget (1503-63), served Henry VIII in various ways, becoming a secretary

of state. He was also a high official under Edward VI and Mary, and having been created, in 1549, Baron Paget of Beaudesert, died June 9, 1563.

The title passed in turn to Paget's sons, Henry and Thomas, and then to other descendants. Henry, the 7th baron, was made earl of Uxbridge in 1714, but this title became extinct in 1769, when the main line of the family failed. It was restored in 1784 for Henry Paget, who had inherited the estates and the barony, while his son Henry, the 2nd earl, was made marquess of Anglesey in 1815 in recognition of his services at Waterloo. Many other members of the family were famous either as soldiers or as sailors.

**Paget, SIR BERNARD CHARLES TOLVER** (b. 1887). British soldier. Paget was born on Sept. 15, 1887,



*Paget*

and educated at Shrewsbury and Sandhurst. He served in the First Great War and was commandant of the Staff College, Camberley, 1938-39. In April, 1940, Paget was in Norway,

commanding the British land forces in the Trondhjem-Aandsnes area. He was appointed c.-in-c., South-Eastern Command, in 1941 and became c.-in-c., home forces, in the following year. Paget was responsible for the training of home defence troops, and those going overseas before 1944 as well as the greater part of 21st army group, introducing realistic methods of training and founding the system of battle schools. In Dec., 1943, he was made c.-in-c., Middle East, retaining this appointment until his retirement in 1946. Principal of Ashridge College, 1946-49, he was created G.C.B. in 1946.

**Paget, SIR JAMES** (1814-99). British surgeon and pathologist. Born at Yarmouth, Jan. 11, 1814, he studied at St. Bartholomew's hospital, London, and became demonstrator in the hospital in 1839. His lectures, 1847-52, as professor of anatomy at the College of Surgeons, after-



Sir James Paget,  
British surgeon  
After Millais

wards published in book form, became a standard text-book. In 1871 he was made a baronet, and in 1875 pres. of the Royal College of Surgeons. He died Dec. 30, 1899.

**Pagliacci, I.** Opera in 2 acts by Leoncavallo. The libretto (by the composer) is reputed to have been founded on an actual incident. First produced at the Teatro del Verme, Milan, May 21, 1892, I Pagliacci was presented at Covent Garden the following year. The opera was first performed in English by the Rouseby company at Leicester in 1893. It is known in Germany as *Bajazzi*, and in France as *Paillasse*.

**Pagoda.** Term in European use denoting a tower-like structure in India and E. Asia. A 16th century Portuguese corruption either of *dagoba*, a stupa or tope, or of Pers. *but-kadah*, an idol-temple, it designates in India temples with pyramidal towers. In Burma it denotes the Buddhist *paya* or *sedi*, a bell-shaped structure with conical finial, often gilded. The most venerated are at Rangoon, Mandalay, Prome, and Pegu. The Siamese *phra* is bell-shaped, with slender annulet spire, as at Phra Pathom, Ayuthia, or pyramidal, with domed cylindrical turret, as at the Wat-ching in Bangkok. The Japanese square timber-built *gojunoto* retains the Korean form, with an odd number of roofs.

China perhaps derived its earliest towers, as at Sian-fu, the oldest extant, from the Babylonian square seven-storeyed *ziggurat*. The later Chinese *taa* became octagonal, with an odd number of storeys; for instance three in the Temple of Heaven at Peiping; seven at Ningpo; nine in the Porcelain Tower at Nanking, which was destroyed in 1854. The Kew Pagoda, 10-storeyed, erected 1761, follows the Chinese pattern.

**Pagoda Tree** (*Sophora japonica*). Tree of the family Leguminosae. It is a native of China and Japan. The long bluish-green



Pagoda. This 16th cent. pagoda at Soochow, China is 250 ft. high



leaves are divided into about a dozen oval leaflets, and the small cream-coloured flowers are lavishly produced in large clusters. The Chinese obtain from the flowers a fine yellow dye, used for dyeing the silk robes of the mandarins.

**Pago Pago.** Natural harbour on the S. coast of Tutuila, one of the Samoan Islands. Called also Pango Pango, it belongs to the U.S.A., which has used it as a naval station since 1839. Its right to do so was established by treaty in 1872, and later was allowed to lapse, but in 1889 the right of the U.S.A. to the island of Tutuila was recognized by the Berlin General Act. The town is the seat of administration for American Samoa, where an American naval radio station is maintained. The harbour is the crater of an extinct volcano.

**Pahang.** State of the Federation of Malaya. It has a long coast on the S. China Sea, lies between Johore on the S. and Kelantan and Trengganu on the N., and is separated from them by high mts. It consists almost entirely of the basin of the Pahang.

Pahang was an independent Malay state until 1888, when it came under British suzerainty; and joined the Federated Malay States in 1895. It is sparsely populated. Pekan at the mouth of the Pahang is the seat of the sultan; Kuantan, farther N., is connected by road with Kuala Lipis. The state is traversed by the rly. from Gemus to Tumpat on the N.E. coast of Kelantan. Its area is 13,820 sq. m. Pop. (est.) 275,000.

**Pahlavi** OR PEHLEVI (Pers. *Pahlav*, Parthian). Name of a cursive script of Aramaic origin used in writing Persian during the Sassanian period. The name is also often used for the Persian language of the same period, otherwise called Middle Persian.

**Pahlevi.** Family name of the rulers of Persia. See Mohammed Riza Shah Pahlevi; Riza Shah Pahlevi.

**Paiforce.** Allied force formed in Persia and Iraq, Aug., 1942. It comprised the British 10th army (only a small group), a large Polish army formed from prisoners taken by the Russians in 1939 and later released, and the Iraqi army. Its main task was to safeguard the Persian oilfields. Paiforce (the name was derived from the initials of Persia And Iraq command) saw no fighting, but under exacting conditions undertook heavy constructional duties and was responsible for the despatch to Russia through the Anglo-American sup-

ply lines of more than 4,000,000 tons of material.

**Paignton.** Urban district and watering place of S. Devon, England. It stands on Torbay, 3 miles from Torquay, with a station on the British rlys. W. region. The chief building is the Perpendicular church of S. John. The Bible Tower is part of the old palace of the bishops of Exeter. It is so called because here Miles Coverdale prepared his translation of the Bible. The attractions include spacious sands and zoological gardens. Pop. (1951) 25,553.

**Pain** (Lat. *poena*, punishment). State of distress, bodily, mental, or both. Physical pain may usually be regarded as a danger signal, showing that some physical condition is wrong, though not necessarily in the place in which the pain is felt. The severest forms of mental pain are grief, shame, and acute anxiety. When they are connected with deep moral fears they can be so intolerable that the mind gets rid of them by repression (*q.v.*).

All healthy beings strive to avoid mental pain, since it invariably gives rise to resentment even when this is not consciously felt. This resentment may change into bitterness or hostility.

The self-infliction of pain, sometimes to the point of torture, is a widespread habit in human beings, and under the name of asceticism has played an important part in human history. Biologically and psychologically, pain is an evil, though when associated with great effort, laborious toil, deep sympathy, etc., the results may on the whole be good. See Pleasure.

**Pain,** BARRY ERIC ODELL (1864-1928). British author. Born Oct. 22, 1864, and educated at Sedbergh School and Corpus Christi College, Cambridge, he turned early to literary work, and became known as a writer of humorous stories, sketches, and parodies. In a Canadian Canoe appeared in 1891, and among his many subsequent works the Eliza sketches were outstanding (Eliza, 1900; Eliza Getting On, 1911; Exit Eliza, 1912). Also popular were The One Before, 1902; and Stories in Grey, 1912. He died May 5, 1928.

**Paine,** THOMAS (1737-1809). British publicist and politician. Born at Thetford, Norfolk, Jan. 29, 1737, son of a small farmer and staymaker, he tried various occupations, including that of excise-man. Dismissed in 1774, he met

Franklin in London the same year, and, apparently under his advice, emigrated to America. Settling in Philadelphia, Paine issued in 1776 a pamphlet entitled *Common Sense*, putting the case for independence, which, according to Washington, had great influence on the colon-



Thomas Paine,  
British author  
After Romney

ists. He fought in the U.S. army, and received a government appointment, which he lost.

In 1787 Paine returned to England and issued *The Rights of Man* as a counterblast to Burke's *Reflections on the French Revolution*. The work made a great sensation and Paine was indicted in 1792, but escaped to France, where he had an enthusiastic reception. Subsequently he fell foul of Robespierre, was imprisoned and narrowly escaped the guillotine, but was released in 1794 on claiming American citizenship. The first part of *The Age of Reason* had been finished just before his arrest; the second followed in 1795. The book was an attack upon revealed religion from the point of view of the 18th century deists, accompanied by all the vigour and occasional brutality which characterised Paine's writings. He died in New York, June 8, 1809. The standard biography is by M. D. Conway, 1892.

**Painlevé,** PAUL (1863-1933). French statesman. Born in Paris, Dec. 5, 1863, and educated at the



Paul Painlevé,  
French politician

École Normale Supérieure, he became professor at Lille and later at the Sorbonne, being well known as a mathematician, scientist, and philosopher. Appointed professor of mechanics and engineering at the École Polytechnique, 1904, he became interested in aviation. Painlevé entered the chamber of deputies as a Socialist in 1906, and was soon chairman of the navy committee. He concentrated the fleet in the Mediterranean, thus necessitating an understanding with Great Britain. Early in the First Great War he held administrative posts, and in 1915 became minister of public instruction.

Resigning on a disagreement with Briand, he soon became minister of war under Ribot, and was responsible for the replacement of Nivelle by Pétain and for steps aimed at raising the morale of the rank and file. He succeeded Ribot as premier in Sept., 1917, but was forced to resign two months later.

In 1924 he was elected president of the chamber of deputies, but was defeated for the presidency by Doumergue. On Herriot's fall in 1925 he again became premier, but was criticised for half-hearted measures to save the franc and for his choice of the pacifist Caillaux as finance minister, so that his government fell. He was minister of war under Briand, 1926, and under Poincaré, 1926-29; and minister for air in 1932. He died Oct. 29, 1933. A Life, by E. Charles, appeared in 1925.

**Paint.** Pigment ground to a smooth paste in a medium which after application to the surface sets to a hard more or less elastic film. Such films are applied for both decorative and protective purposes and have been used from the earliest times. They may nowadays be classified as oil paints, water paints, emulsion paints, and bituminous paints. Preparations in which the medium is a solid (*e.g.* nitrocellulose) dissolved in a suitable solvent are described as lacquers (*q.v.*).

**OIL PAINTS.** This is the largest class. Unless otherwise specified, it is generally assumed that an oil paint is intended. Such paints contain (1) an oily medium, which may contain resinous substances to increase the gloss and hardness of the film; (2) driers, which accelerate the drying of the film; (3) volatile solvent (thinners), which reduce the paint to working consistency; (4) pigments, which give the necessary opacity and colour to the film; (5) extenders, which, although of little or no tinctorial value, contribute to the consistency of the paint and to the physical properties of the film.

The basis of oil media is usually linseed oil. Since about 1920, china wood oil has sometimes been used in conjunction with linseed. Properly refined linseed oil, when spread in a thin film, dries in 8 to 9 days. By the addition of small amounts of lead, manganese, or cobalt compounds, the drying time can be reduced to 8 hours under normal atmospheric conditions. When heated, linseed oil gradually thickens, eventually forming a tough leathery mass, and it is therefore possible to produce

an oil (stand oil) of any desired consistency. Stand oils dry slower than untreated linseed oil, but the films are more durable and glossy.

The volatile thinners determine the consistency of the paint. Turpentine, particularly American, was once considered the only really satisfactory thinner, but though its merits are still recognised, white spirit (a petroleum distillate) is much used. This was first introduced in 1885 as "Patent Turpentine," and it is now recognised as a paint ingredient, not merely a substitute for turpentine.

The use of pure colours of great tinctorial strength renders it both possible and necessary to use considerable quantities of substances which, though of little pigmentary value, act as bases for the expensive pure colour and contribute to the properties of the paint. Thus substances such as china clay and asbestine, being light and bulky, reduce the tendency of heavy pigments such as white lead to settle out, and of reactive pigments such as zinc white to form hard deposits, in ready mixed paint. Barytes, on the other hand, is a heavy substance, and being hard and crystalline adds bulk to the paint and increases the solid content and hardness of the film. In undercoats it gives a "tooth" to the film which improves the adhesion of subsequent coats. Few paints consist wholly of one pigment.

**GLOSS PAINTS AND ENAMEL PAINTS.** There is no definite line of demarcation between these. Enamel paints are the highest class and the medium consists largely of a varnish containing resins. The medium of gloss paint varies from linseed oil with a proportion of stand oil to a high proportion of thickened oils and including more or less resin. In both classes natural or synthetic resins may be used.

**WATER PAINTS.** The simplest type of water paint is a mixture of whiting with size solution. More satisfactory results are obtained by using good quality glue and pigments carefully selected to give the best results. Such paint eventually becomes practically insoluble in cold water, but still remains soluble in hot water. A water resistant paint can be made from casein. (*See Distemper.*)

**EMULSION PAINTS.** In these the medium may be described as an emulsion of a water and an oil medium, though a suitable substance is usually added to ensure stability of the emulsion. They are

largely used for decorative purposes, especially where a flat (*i.e.* dull) finish is desired.

**BITUMINOUS PAINTS.** These may consist almost wholly of bituminous substances dissolved in volatile solvent or be complex mixtures of the varnish type in which the bitumen wholly or partly replaces the resin. As with the ordinary oil varnishes, the properties of the product are much influenced by the methods of manufacture. Paints in which the medium consists essentially of bitumens in volatile solvent are rapid drying and are much used for metalwork, particularly where stove drying is possible. Paints in which oil is present in quantity are generally slower drying but give thicker and more durable film. Such paints are much used for protective paints on ironwork. Naturally the colour range is limited by the colour of the medium. Bituminous paints are largely used as ships' paints. *See Colour Mixing; Painting and Decorating; Pigments; Varnish.*

**Painted Lady** (*Vanessa cardui*). A butterfly of the family Nymphalidae and of nearly world-wide range. It is unable to survive the winter in Great Britain and its occurrence is due to migrants from N. Africa which produce a autumn generation of British-born individuals. In some years it is exceedingly abundant, in others scarce or absent. The caterpillar has short branched spines and lives on thistles and other plants, whose leaves it draws together with silk to form a shelter. *See Butterfly colour plate.*

**Painters' or Painter-Stainers' Company, THE.** London city livery company. In the 15th century a



Painters' Company arms

guild of S. Luke, it was granted charters in 1581 and 1685, and its minute books go back to 1623. Its freemen include Sir Peter Lely, Sir Godfrey Kneller, and Sir Joshua Reynolds. The original hall, at 9, Little Trinity Lane, E.C., bequeathed to the company by Sir John Browne, serjeant painter to Henry VIII, was rebuilt in 1668, and enlarged in 1880 and 1916. The doorway is attributed to Grinling Gibbons. The old portion of the building was destroyed by German bombs in 1941. *Consult The History of the Painter-Stainers' Company, W. A. D. Englefield, 1923.*



# PAINTING: THE ART OF THE PICTURE

GORDON STOWELL, A.R.C.A. (Lond.)

*This article deals with pictorial art. The craft of what is generally known as Painting and Decorating is treated separately under that heading. An historical account of the development of the artist's technical methods is here followed by a general survey of the great schools of painting, and a particular account of British painting from the 17th to the 19th centuries, then by a special section on Painting in the 20th Century. See also Art; Drawing; Landscape, etc.; under the heading Art in the entries on France, Germany, Italy, Spain, etc.; Dutch School; Flemish School; and entries on the world's great painters*

The pigments of the artist's palette are essentially the same animal, vegetable, and mineral substances as those used in other forms of painting (see Pigments). They are applied to a surface usually but not invariably by brush, after mixture with a medium, e.g. water, linseed oil, egg tempera. For oil media the brushes most used are of hog-bristle; for water media, the more pliable sable. Until comparatively recent times it was the artist's practice to grind and mix his own pigments in the studio according to his needs, but artists' colours are now specially prepared by manufacturers, ready mixed to a stiff paste, with linseed oil or poppy-seed oil, and packed in metal-foil tubes. Those intended for water-colour work are still sometimes sold in small hard flat cakes, prepared with size or gum arabic, but are more usually softened with glycerine and sold in tubes or in china pans and half-pans. The artist using an oil medium will still choose to dilute or re-mix the pigments on his palette, sometimes with turpentine, according to his immediate needs. If he is using an oil medium, the surface on which he paints, canvas or wood, needs to be primed with a coating of size, usually mixed with white lead. Canvases are today usually obtainable already primed and stretched on a frame to give a flat surface. Water-colour paper is also usually stretched to prevent "cockling" by saturation during the process of painting.

## Choice of Pigments

The artist's choice of the pigments he uses is governed by consideration of their durability, their colour, their comparative transparency or opaqueness, and the possible chemical action of one pigment upon another. The ready solubility in water of some pigments, e.g. prussian blue, crimson lake, is an obvious recommendation for their use in water-colour painting.

Other mediums used include fresco, distemper (gum), encaustic (wax, worked with hot tools), pastel, and gouache, or body colour (water colour made opaque by admixture with Chinese white).

Prehistoric and antique painting was done with coloured earths. In ancient Egypt, as in ancient Greece, distemper was widely used, but the later Greco-Egyptian painting, which survived into the 2nd century after Christ, also used encaustic. The work of the mere journeymen painters in the mummy portraits of this period suggests a wonderful level of accomplishment, but though the Greeks must have created paintings as great as their sculpture, they are lost to us. The Egyptians used outline and colour, but the Greeks took to filling in the outline for drawing with its own colour, thus creating the silhouette, as in their vases.

The craft as we know it today began with the early Italians. They painted in fresco on walls, and in tempera on panels of wood, over which canvas had been pasted, with a plaster ground over the canvas. Fresco is water-colour on freshly laid plaster, with no glue to hold it; the paint is driven over the newly-laid plaster, and becomes the surface as it dries. Thus it cannot be retouched or altered. In these primitive frescoes the outline was drawn, and the colours laid in flat coats. The early painters concentrated on line, colour, and composition in their desire to illustrate the teachings of the Church, and the discipline of the medium compelled fine draughtsmanship. With the dawn of the Renaissance came first a desire to give the objects depicted a more solid appearance with the help of simple light and shade. Masaccio was one of the first to mass light and shade. Then came Uccello and others with their discovery of the laws of linear perspective, and Mantegna with his great interest in the foreshortening of the human figure. Piero della Francesca was one of the earliest experimenters in aerial perspective, or the recognition of the effect of atmosphere in giving depth to pictorial representation. Later painters, culminating in Leonardo da Vinci, strove to present objects more and more skilfully as though seen in the round, through modelling by shading.

Meanwhile in the Low Countries the brothers van Eyck had per-

fectured a method of oil painting of which the secret is said to have died with them. They painted in oil on a white gesso ground. There are mentions of the oil medium in the 10th and 12th cent., and in the 14th cent. it was said to be in use among German artists. Probably it was developed more readily in the northern countries because the moist air was deleterious to fresco. In Italy the use of oil was confined to coloured glazes over tempera painting, until Antonello da Messina (it is said) introduced the Flemish method. It was quickly adopted, if only because it lent itself, as other media did not, to alteration and retouching. The medium certainly demands an infinitely less strict discipline, and there are many who date a decline in painting from its introduction. Michelangelo despised it as "fit only for women"; but Pollaiuolo, Perugino, Verrochio, Ghirlandaio, and da Vinci all used it.

## Methods of Oil Painting

The Venetian painters, working in a moister climate, adopted oils with most enthusiasm. Two techniques prevailed in Italy; the Flemish method, followed by the Florentines, in which a smooth impasto was imposed upon a monochrome underpainting in brown and white, with solid paint for the lights and transparent for the darks to preserve their luminosity; and the Venetian method, in which the underpainting was in full solid impasto, to which transparent oil glazes were added. Titian and Tintoretto were among the first to represent objects as seen "in the large," omitting conflicting details and leaving the broad masses to impress the eye. Titian painted in tempera a solid monochrome of massed light and dark, then painted his superb colour over all in oils.

The first to use the "direct" technique, painting directly on the canvas in full solid colour without subsequent glazes, were the *tenebroso*, i.e. Caravaggio and his followers working in Naples. This great change was introduced into Spain (by Ribera) and Holland early in the 17th century. Velasquez in Spain, and Rembrandt

and Hals in Holland were all masters of the "direct" method. Velasquez, by his masterly representation of the tone values due to the nature of light, may be looked upon as the first of the Impressionists.

Direct painting led to an appreciation not only of the representation of the appearance of objects but in the technique of brushwork, and a handling of the loaded paint which took pride in displaying, rather than concealing, the sweep and mark of the brush. Painting became more than satisfied to be, not an aping of nature, but a frank translation of nature into terms of individual brush-marks. Painting technique could henceforward be enjoyed for its own sake.

#### Painting in Water Colour

Water-colour painting, long practised in Japan, found its most notable expression in England, especially in the early 19th century. Used almost exclusively for landscape painting, first as an enhancement to topographical drawings in line, it was found to possess a soft limpid quality particularly suited to the representation of the English atmosphere. Its use in flat transparent washes of harmonious colour is best seen in the work of Cotman. On the other hand, Turner used it supremely well as a means to an end, and was no purist in technique so long as he achieved the desired effect; he did not hesitate to use transparent colour, opaque colour, and additional effects obtained by the use of charcoal, sponge, or pen-knife, all in the same picture. The range of water colour is necessarily limited. In comparison with oil painting, it is chamber music rather than a full orchestra. Consult *Materials of the Painter's Craft*, A. P. Laurie, 1910; *The Pigments and Mediums of the Old Masters*, A. P. Laurie, 1914.

**SCHOOLS OF PAINTING.** The accompanying table sets out the chief historical schools of painting. They are considered in detail in different parts of this Encyclopedia. For Italian, French, German, and Spanish painting, see under the sub-heading Art in the articles on Italy, France, Germany, Spain. See also Dutch School of Painting; Flemish School of Painting; Impressionism; Pre-Raphaelites, etc. The English and Scottish schools are dealt with below under the separate sub-heading British Painting.

The period of the historical schools may be taken as coinciding with the conception of painting as

the art of representing the visual truth, sometimes for its own sake, sometimes subserviently to other ends, e.g. religion, and combining this visual truth with harmonious and pleasing design. The balance between visual truth and beauty of design varies with individual artists as well as with particular schools. Thus, broadly speaking, the Italians strove after types and forms of idealised beauty, while the Northern schools, German, Flemish, Dutch, and English, found

their most congenial expression in the representation of the individual character of people and things, i.e. were more *naturalistic*.

Still generalising, the Florentine school developed from the painting of frescoes in churches, and many of their greatest paintings are of religious subjects and have therefore a certain decorative monumental quality which was not forsaken when the decorations were painted for the walls of palaces and great houses and the subject

#### PAINTING: MAIN HISTORICAL SCHOOLS AND PERIODS

SCHOOL	SUBDIVISIONS	LEADING ARTISTS
ITALIAN	<i>Byzantine School</i> , 9th to 12th century <i>Siena</i> , 14th century <i>Florence</i> , 14th to 15th century  <i>Venice</i> , 15th to 18th century  <i>Milan</i> , 15th century <i>Rome</i> , 15th to 18th century <i>Naples</i> , 16th century <i>Bologna</i> , 16th to 18th century <i>Padua</i> , 14th to 15th century <i>Genoa</i> , 15th to 17th century <i>Ferrara</i> , 15th to 17th century <i>Parma</i> , 15th to 16th century	Margaritone, Cimabue  Duccio Giotto, Fra Angelico, Filippo Lippi, Filippino Lippi, Botticelli, Paolo Uccello, Masaccio, Michelangelo Carpaccio, the Bellini, Titian, Giorgione, Tintoretto, Paolo Veronese, Guardi, Canaletto, Tiepolo Leonardo da Vinci, Bernardino Luini Raphael, Perugino, Giulio Romano  Salvator Rosa, Caravaggio Francia, the Caracci, Guido Reni  Squarcione, Mantegna  Giovanni Battista Paggi, Bernardo Strozzi Dosso Dossi, Lorenzo Costa  Correggio
FRENCH	<i>Classic School</i> , 17th century <i>Louis Quinze and Louis Seize</i> , 18th century <i>Classic Revival</i> , 19th century <i>Romantic School</i> , including <i>Fontainebleau Group</i> , 19th century <i>Realistic School</i> , 19th century <i>Impressionist School</i> , 19th century	Claude Lorrain (Gellée), Nicholas Poussin Watteau, Fragonard, Boucher, Greuze, Chardin David, Ingres, Puvis de Chavannes  Géricault, Delacroix, Millet, Corot, Diaz, Rousseau, Monticelli  Courbet, Bastien-Lepage, Constant, Bonnat Manet, Monet, Degas, Sisley, Renoir, Berthe Morisot
GERMAN	<i>Cologne</i> , 14th to 15th century <i>School of Swabia</i> (Colmar, Ulm, Augsburg), 15th to 16th century <i>Nuremberg</i> , 15th to 16th century	Meister Wilhelm, Stephan Lochner  Martin Schongauer, Hans Holbein the Elder, Hans Holbein the Younger  Durer
SPANISH	<i>Madrid</i> , 16th to 17th century <i>Seville</i> , 16th to 18th century	El Greco, Velasquez, del Mazo  Fernandez, Vargas, Herrera, Cano, Zurbaran, B. E. Murillo
DUTCH 17th century		Rembrandt, van Rijn, van Goyen, Hobbema, van Ruysdael, P. Potter, A. van der Velde, Cuyp, Hals G. Dou, Vermeer of Delft, de Hooch, Terburg, Jan Steen, Adriaen Brouwer, Metsu
FLEMISH 14th to 17th century		Hubert and Jan van Eyck, Hans Memlinc, Roger van der Weyden, Quinten Matsys, Mabuse, Rubens, Van Dyck
BRITISH	<i>17th century Portraitists</i> <i>18th century Portraitists</i>  <i>Subject and Landscape Painters</i> , 18th to 19th century <i>Pre-Raphaelite School</i> , 1848-c.1900	Lely, Kneller Reynolds, Gainsborough, Romney, Raeburn, Lawrence Hogarth, Morland, Crome, Turner, Constable, Cotman, Wilkie, Watts, Millais Holman Hunt, Rossetti, Burne-Jones



matter was classical rather than religious. There is much in common between *The Last Judgement* of Michelangelo and the great decorations of Paolo Veronese.

The early Flemish and German schools, developing the oil medium more suited to the northern climate, painted altar-pieces rather than walls, and their paintings are therefore smaller and more intimate, as well as revealing the greater northern interest in individual character. Rubens and Van Dyck are in a class by themselves. Rubens, as one of the world's supreme painters, came near achieving the perfect blend of classicism and naturalism. In the Spanish school, religious subjects also predominate and the conventions are more rigid, until the emergence of Velasquez and his court portraiture. The Dutch school, little concerned with religion, developed the smaller "easel" picture to meet the taste of the rich merchants of the republic—portraits, landscapes, seascapes, scenes of everyday life—and evinced new skill in the representation and development of *chiaroscuro*.

French painting was largely eclectic until the time of Watteau, who, with his immediate followers, found congenial subjects in light fancies reflecting the mood of 18th century France. A return to severe classicism with David and Ingres accompanied the Napoleonic period, followed first by a romantic reaction, then by a reversion to realism, as expressed in the landscapes of the Fontainebleau group, e.g. Rousseau.

#### Influence of British School

The next inspiration came from England, which early in the 18th century had found its métier in portraiture; in the so-called "historical" subject picture as painted by Copley and West and later deadened out of all recognition by such Victorian painters as Maclise, until rescued by the short-lived revolution of the Pre-Raphaelites; and towards the end of the 18th century, in landscape. Constable and Turner, the latter reaching new heights of technical achievement in the representation of sunlight, often by the comparative elimination of almost everything else, had an enormous influence on the development in France of the Impressionist school, which in seeking to represent the effect of light upon an object rather than the object itself brought logical finality to the search after visual truth. From the time of the

Impressionists the French school consolidated the leading position it had steadily acquired during the 19th century. Subsequent developments in the art are described in the special section Painting in the 20th century. Consult *A History of Painting*, 8 vols., H. MacFall, 1911; *The Approach to Painting*, T. Bodkin, revised edn., 1946.

**BRITISH PAINTING.** Painting was a late development in England by comparison with Italy, the Netherlands, Spain, and even France, and the development of anything like a "school" with recognizable national characteristics began only as late as the 18th century. But there had already been founded a tradition in portraiture, fostered by the sojourn in England of Holbein, under the patronage of Henry VIII, and that of Van Dyck as court painter to Charles I. The influence of these two great masters, however, was unfavourable to the emergence of any indigenous spirit in painting. The earliest English portrait painters of any note were Samuel Cooper, the miniaturist; Lely, court painter to Charles II; and Kneller, painter of the beauties and celebrities of the reign of William III and Anne.

#### Hogarth and his Followers

The first great painter to break completely and deliberately with foreign influence and give utterance to the English genius by portraying the world around him in terms of his own comprehension was Hogarth, supreme painter of the human comedy, who painted the life of the people and recorded the manners and satirised the follies of his age. Yet his genius stands outside any mainstream of development. It had no immediate followers. Contemporaneously, a British school of portrait painters was arising, with Hudson and Allan Ramsay as its first leaders. It reached its culmination in the great trio who dominated English portraiture in the closing decades of the 18th century; Reynolds, Romney, and Gainsborough. The precepts of Reynolds, as given in his *Discourses* addressed to the students of the Royal Academy, were more questionable than his practice; for he preached a "grand manner" in painting based on the scholar's study of the Italian old masters, even in choice of subjects, but his own art was more akin to that of the Dutch school in its fidelity to what his own eyes observed, and in its emphasis on individual

character in portraiture. Gainsborough, who found favour at the court of George III, had never visited Italy, and paid homage to Van Dyck, but his own original genius shines out clearly in his superb portraiture.

Meanwhile there had been an awakening effort in landscape in the "topographical draughtsmen" of the style of Scott and Saundby, which eventually brought forth England's first great landscape painter, Richard Wilson. Gainsborough also held landscape to be his province rather than portraiture, and contributed prodigiously to its development in his portrayal of the English rural scene. Two painters from the American colonies, Benjamin West and Copley, created a native school of historical painting, while Cosway and Downman raised the art of portrait miniature to higher standards.

#### The Royal Academy

The founding of the Royal Academy in 1768 was the outward expression of this sudden surging of native genius. Reynolds was its first president, and Gainsborough, Wilson, and West were among the original members. From that time the story of British painting became closely identified with that of the Royal Academy, which has remained the strongest single influence in the art of the country. Against that influence there have been frequent revolts, but they have been revolts against an admitted authority; and if there was any merit in the revolt, sooner or later the authority has almost always overtaken and absorbed it. The number of English painters of the first rank who have successfully dissociated themselves from the Royal Academy is very small.

As the 18th century ended, there came to the front a younger group of portrait painters—Northcote, Beechey, Hoppner, Opie, Lawrence, and, towering above them all, the Scottish master Raeburn. Stubbs was painting sporting life, horses, and dogs. Morland recorded the life of the countryside, the tavern, the stables, the pursuits of rural folk. By the year 1800, all that was most vital in the world's painting was British. The landscape painters were creating pure impressions of nature in lyrical fashion. In Norwich, Crome was going direct to nature, developing from where the 17th century Dutch painters had left off. Girtin was playing a great part in changing the art of

water-colour drawing into that of water-colour painting.

In Turner the British race found its supreme genius in painting; in the realm of landscape the supreme artist of all time, the equivalent of Shakespeare in literature and Beethoven in music. He employed colour more poetically than it had ever been employed before. Constable, in pursuit of ways to depict even more faithfully and directly the English scene and even more the English weather, had a forceful influence on French landscape painting, as had the short-lived Bonington. Beside them may stand the landscape painters of the Norwich school, led by Crome and Cotman; the water-colourists Cox, De Wint, and Prout; and painters of the sea like Clarkson Stanfield. Landseer won deserved fame in painting animals, Wilkie in rendering Scottish home life.

#### The "Subject" Picture

But this fine flowering died away, and British painting was in danger of becoming stereotyped, but for the new life given to it by the Pre-Raphaelites, led by Holman Hunt, Millais, and Rossetti. With all their faults (their greatest being a subservience to the manner as well as the spirit of the Italian painters), they brought back vitality by taking their canvases out of the studios into the open air. The Victorian tradition of "subject" paintings, intellectual and literary rather than visual in conception, like large-scale coloured book illustrations, also owed much to their influence. Frith (painter of *Derby Day*, *The Railway Station*, and *Ramsgate Beach*) was among the most successful painters of such works, and this was the aspect of Pre-Raphaelitism most clearly retained by Millais after the dissolution of the Pre-Raphaelite Brotherhood.

Out of the primitive academism of the Pre-Raphaelites, through the influence of Rossetti, there grew the aesthetic movement of the 'sixties, whose greatest exponent was Burne-Jones. Its conventions remained early Italian, and it has as little to do with the expression of national genius as had the classical academism of which first Leighton, then Poynter and Alma-Tadema, were leading representatives.

The rise of Impressionism in France had its inevitable echo in England, where Whistler, an American, combined the theories of Impressionism with the decorative quality of Japanese art and

exploited an exquisite gift for interpreting nature's twilight moods. The movement found many other sympathetic followers to apply the methods of Impressionism to the English scene, notably Wilson Steer and Sickert. By the end of the 19th century Impressionism was accepted, with headquarters at the New English Art Club rather than at the Royal Academy, but its ultimate inspiration remained French. The last native movement of the century was Scottish, centring on Glasgow and developed by George Henry, John Lavery, Arthur Melville, E. A. Hornel, and others. It owed something to the

early Impressionists, something to the growing regard for tonal relationship or "values" in painting, and a good deal to the eager spirit of independence. The riotous palette of Melville and the pattern painting of Hornel represented a marked advance in the decorative use of fresh, strong colour, which among English painters of the same period found its fullest expression in the work of Brangwyn. Consult *British Painting* from Hogarth's *Day to Our Own*, W. Grant, 1945; *Introduction to English Painting*, J. Rothenstein, 1947; *An Outline of Eng. Painting*, R. H. Wilenski, 1948.

## PAINTING IN THE 20TH CENTURY

Sir John Rothenstein, Ph.D., Director of the Tate Gallery, London

*Here, following the general article on the art of painting, is an account of the principal movements and influences which, developed since Cézanne, have affected the practice of painting in the contemporary world. See also Art, with illustrations*

The painting of the 20th century is distinguished by a weakening of tradition which is without precedent—a weakening regarded by a number of responsible critics as a prelude to dissolution. As a result of this waning of authority the arts have assumed a bewildering variety of forms.

At the beginning of the century a reaction against Impressionism was gathering force. Impressionism may be described, in one sense, as the culmination of an endeavour (which had been in progress since the Renaissance) to depict the commonly accepted truths of natural appearance as closely as possible. The power to describe form in its complexity and plenitude had been won. But to the following generation it seemed that this victory had been won at too great a sacrifice.

For this generation Cézanne—though the least didactic of men, who gave little counsel beyond the recommendation of a close study of nature—became the most influential painter of the age; his monumental but not unsensuous art proved to be a point of departure for the chief contemporary movements. These movements manifested in common, in despite of the advice of Cézanne, an ever more pronounced disregard for the commonly accepted truths of natural appearance. The new climate which they brought with them proved to be one in which not only the realistic tradition but all traditions tended to disintegrate.

In the 20th century movements in painting quickly lost their momentum and identity: the individual personality rather than the school

became more and more the sole intelligible field of study. This process of dissolution notwithstanding, it is still possible to distinguish certain general movements. The most persistent of these is one deriving from the uncompromising radical movement known as Fauvisme, of which Henri Matisse (b. 1869) was the leader. The Fauves set themselves to create a frankly architectonic and decorative art. The architectonic derived from the severely structural elements in Cézanne, the decorative from the strong flat colour of Gauguin. But this radicalism rapidly went further, and resulted in an attempt to create an essentially geometric art without discernible reference to the visible world, an art of self-sufficient formal structures. The most uncompromising manifestation of this widely spread phenomenon was Cubism, of which the leaders were Georges Braque (b. 1881), Juan Gris (1887–1927), and Fernand Léger (1881–1955). The abstract art which Cubism tended ultimately to foster flourished in France and Spain, but it was less well adapted to express the less logical but intenser vision of the North. Under the original inspiration of Van Gogh and later of the Norwegian Edvard Munch (1863–1944), there grew up a movement known as Expressionism, distinguished by highly charged emotion, by frank preoccupation with human drama, and by a violent, strongly coloured method of painting. Munch, who is little known in England, exerted a widespread influence in Central Europe. It would be erroneous to over-stress the part played by race and



environment, however, in determining the character of an artist: thus Georges Rouault (1871–1958), the most powerful French painter of the age, may be said to be an Expressionist, while Germany gave birth, in Franz Marc (1880–1916), to a characteristic Cubist.

#### Picasso and Surrealism

There also emerged a third movement, in its essence intuitive and subjective. Pablo Picasso (b. 1881), who expressed himself in many different styles (he was prominent among the inventors of Cubism), is perhaps most typical as a subjective painter. Of all the revolutionary movements in the arts, this involves the most radical departure from the older traditions, for it renounces not only the representation of the appearance of things, but a concept even more fundamental, namely, rational modes of apprehension. Picasso has declared that he does not know in advance what he is going to put on the canvas, any more than he decides in advance what colours to use; that, while he works, he takes no stock of what he is painting; that he feels every time he begins a picture as though he were throwing himself into the void. Implicit in this statement is a total renunciation of the objective world, and a total turning inwards of the artist's vision, so that the contents of his own mind—his irrational fancies or his unconscious self—becomes the sole subject of his art. The art, entirely subjective, resulting from such an introversion may be described as one of free abstract symbolism. The influence of Freud in the creation of such an art is conspicuous.

Surrealism, a related but distinct development of subjective art, also derives directly from Freud. It is not, however, based exclusively upon the unconscious; it rather attempts, by the juxtaposition of dream imagery with meticulously rendered objects as observed by the conscious eye, to express, in all its variety and contradiction, the whole content of the mind. Loosely associated with this movement, but difficult to classify precisely, are Paul Klee (1879–1940), and Marc Chagall (b. 1887), both painters of poetic and highly personal fantasy.

During the earlier part of this period British painting cannot be said to have played an important part in the initiation of any of the successive movements by which the character of Western

art has been determined, but all of them have had significant exponents in Great Britain. Wilson Steer (1860–1942) and W. R. Sickert (1860–1942) were indebted to the Impressionists, J. D. Innes (1887–1914) and Augustus John (b. 1878) to Gauguin, Matthew Smith (b. 1892) and Duncan Grant (b. 1885) to the Fauves. Paul Nash (1889–1946) and Edward Wadsworth (1889–1949) first to the Cubists, later to the Surrealists. Surrealism and the abstract movements continue to exert an influence upon the younger generation, but their work, although it derives from the mainstream of Continental art, is not only highly personal but markedly national in feeling. During the Second Great War, when contact with the Continent was interrupted, the strong native spirit of romantic poetry asserted itself, stimulated by the emotional freedoms of contemporary European art.

The presence of this spirit in the work of Henry Moore (b. 1898), Graham Sutherland (b. 1903), David Jones (b. 1895), Edward Bawden (b. 1903), Eric Ravilious (1903–1943), John Piper (b. 1903), and Edward Burra (b. 1905) is sufficiently apparent. Its most obviously English expression is to be found in the work of Stanley Spencer (b. 1892), whose mural paintings in the memorial chapel

have seemed, before 1939, to have cultivated an esoteric vision, found, in their response to the war, a common ground of contact with the public, thus narrowing the lamentable rift which has tended to place the artist, increasingly immersed in theory or in personal idiosyncrasies, in a position of unprecedented isolation.

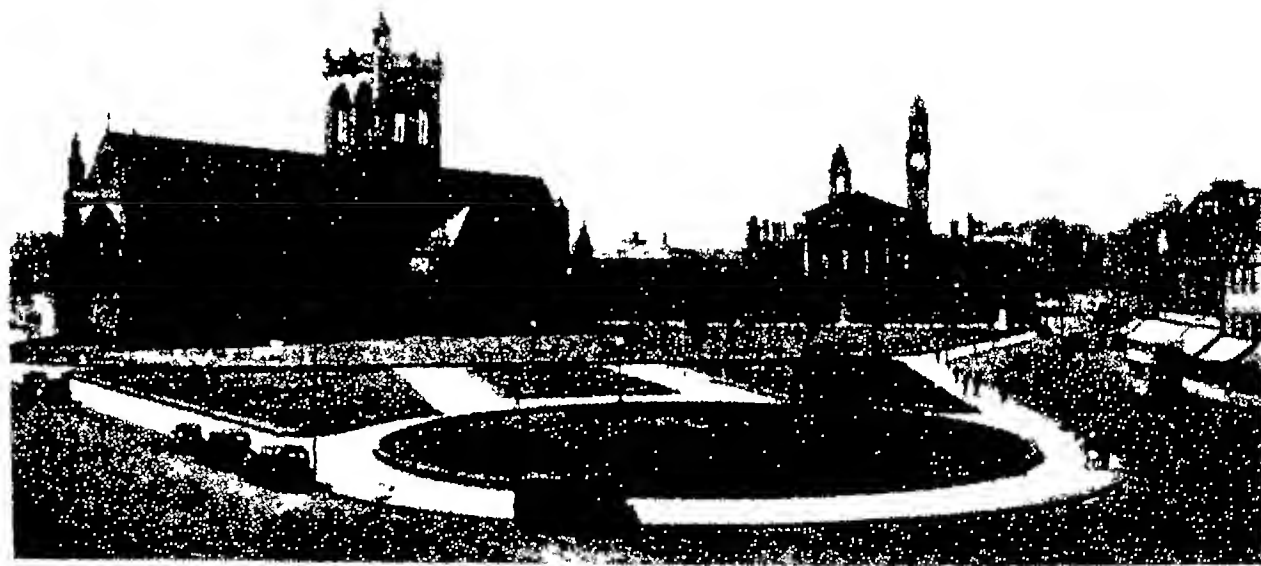
**Paisa.** Indian coin worth  $\frac{1}{16}$  of a rupee. The naya paisa (new paisa) worth  $\frac{1}{100}$  of a rupee, was introduced April 1, 1957, with the decimalisation of the Indian currency.

**Paisley.** Burgh, river port, and market town of Renfrewshire, Scotland. It stands 7 m. W. of Glasgow on the White Cart, near its union with the Clyde. It has an airport. The old town is on the W. of the river, the new town on the E. The parish church



Paisley arms

is the abbey, restored to its former magnificence; it contains tombs of some of the Stuarts. There are a town hall, municipal buildings, county buildings, observatory, free library, and museum. The grammar school dates from 1576. It is noted for its thread; carpets, chemicals, starch, soap, etc., are made; and there are dyeworks, distilleries, engineering works, ship-building yards, and a harbour.



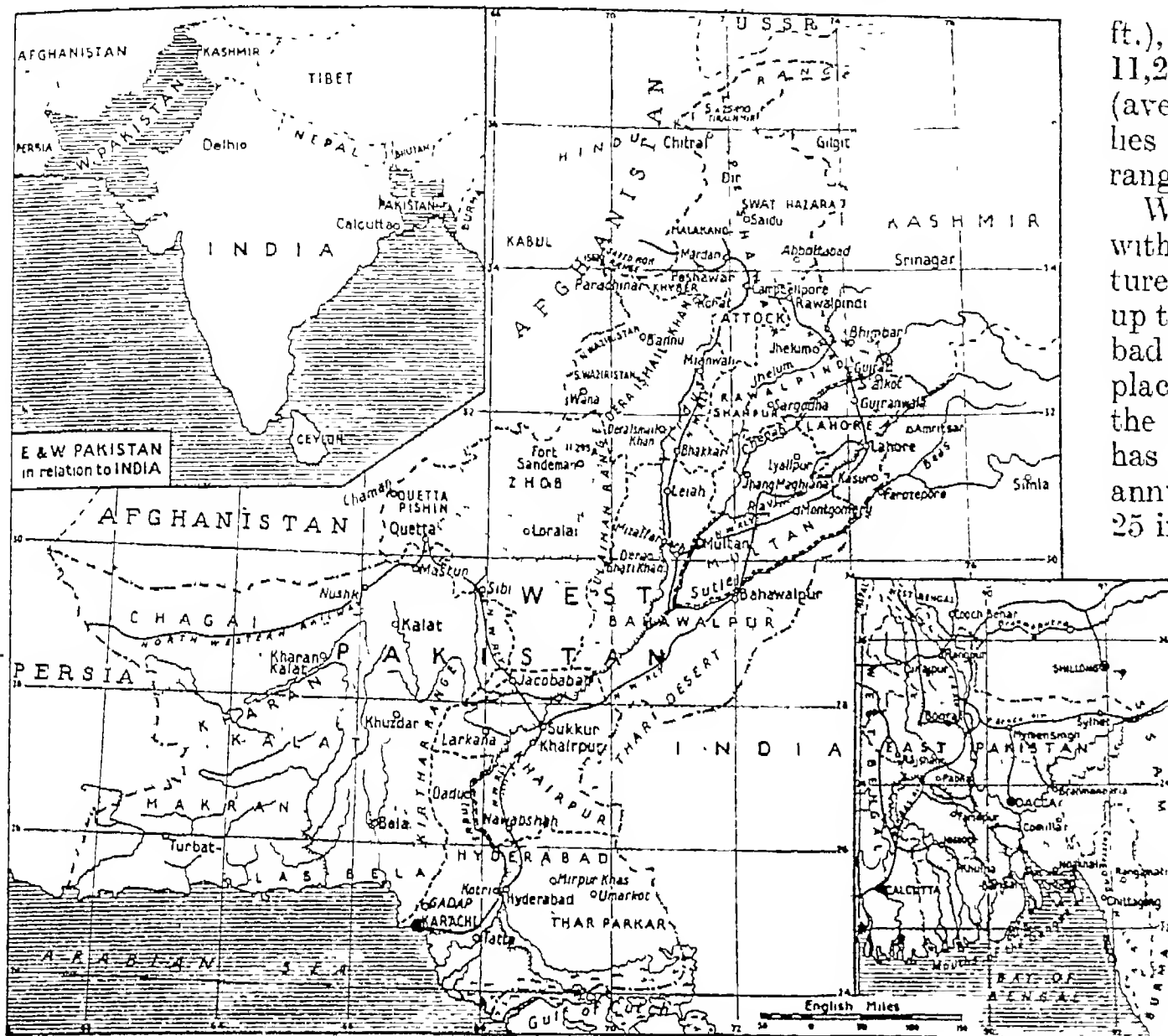
Paisley, Renfrewshire. View of this old Scots town showing Paisley Abbey, which is also the parish church, and the Clark Town Hall

of the Oratory of All Souls, at Burghclere, constitute one of the few major monumental works of art carried out in England during the present century.

The war had a further important effect upon British artists. They were, like other men, deeply moved by the spectacle of tragedy and ruin and struggle, and official patronage gave them every occasion to express their feelings and has even pointed the way to themes which have evoked in them an earnest response. As a consequence, many artists who might

The deepening of the river made it possible for large vessels to reach the town.

Originally called Passeleth, Paisley grew up around an abbey founded about 1160 and given at the Reformation to a layman. In 1488 it was made a burgh. About 1700 it began to be a manufacturing centre, famous shawls being made; but the introduction of cotton thread industry about 1810 laid the foundation of its real prosperity. Paisley forms a burgh constituency. Market day, Mon. Pop. (1951) 93,711.



**Paithan.** A town of Bombay, India, in Aurangabad dist. It stands on the Godavari, 30 m. S. of Aurangabad. One of the oldest cities of the Deccan, it was formerly in Hyderabad state, and had a great reputation for its excellent silk goods. Pop. (est.) 15,000.

**Paiute** OR PAVIOTSO. Primitive people of the great basin of western North America. Living in small wandering groups, they subsisted by hunting and collecting wild seeds, berries, and roots. A few groups irrigated valley patches to improve the supply of wild plants but did no cultivation.

## PAKISTAN: MUSLIM STATE OF S.E. ASIA

*Here is an account of the new country carved in 1947 on a religious basis out of British India. For the earlier history of the areas included in it, see under India: Sub-Continent of Asia, and articles on the component parts of Pakistan*

Pakistan is a country of south Asia, created Aug. 15, 1947, when British sovereignty in India was transferred to the new dominions of India and Pakistan. Proclaimed a republic in 1956 (though remaining in the Commonwealth), it consists of two provinces, West Pakistan (created 1955 and comprising Baluchistan and the Baluchistan states, the North-West Frontier, Province, western Punjab, Bahawalpur, Sind, and Khairpur) and East Pakistan (comprising eastern Bengal and most of the Sylhet district of British Assam). Total area 364,737 sq. m. Pop. (1951) 75,842,135.

The capital of Pakistan, and of the province of W. Pakistan, was Karachi; plans for a new federal capital to be constructed at Gadap, 25 m. N.E. of Karachi, were under discussion in 1957.

The two provinces of Pakistan, between which lie over 900 m. of

territory of the republic of India, are very dissimilar in nearly every particular except that of having a predominantly Muslim population: W. Pakistan is a varied region of lofty, arid mountains, high valleys, broad alluvial plains, and deserts; E. Pakistan is a low, damp, flat delta region.

In W. Pakistan (area 310,236 sq. m.) the Indus river flows south from Kashmir for about 1,000 m. to the Gulf of Cutch in the Arabian Sea; the northern half is drained by the five rivers of the Punjab: Jhelum, Chenab, Ravi, Beas, and Sutlej. To the S.E. of the Indus is the Thar Desert. The whole of the N.W. border of Pakistan is a series of high mountain ranges separating it from Persia and Afghanistan. These are much higher in the N., and, running from N. to S., they include the E. Hindu Kush (with Tirach Mir, 25,400 ft.), Safed Koh range (Mt. Sikaram, 15,620

ft.), Sulaiman range (Kaisargarh, 11,295 ft.), and Kirthar range (average 5,000 ft.); beyond these lies a whole complex of further ranges.

W. Pakistan has a dry climate with great extremes of temperature: less than 40° F. in winter and up to 120° F. in summer. Jacobabad (Sind) is one of the hottest places in the world. Remote from the influence of the monsoons, it has a rainfall varying from 4 ins. annually in the Thar Desert to 25 ins. in N.E. Punjab.

E. Pakistan (54,501 sq. m.) lies mainly in the Ganges-Brahmaputra delta, for the most part at an altitude of less than 300 ft., and riddled with a mass of interwoven waterways, except in the S.E., where the Chittagong Hills rise 600-2,000 ft. in height. It has a monsoon-tropical climate with a mean Jan. temperature of about 67° F., May 83° F. The average annual rainfall is 80 ins., falling mainly during June-September; in the coastal districts 100 ins. is the average, and in Sylhet 140 ins.

Chiefly an agricultural country, Pakistan has approximately 50 p.c. of its total area under cultivation. Irrigation is vital in W. Pakistan, and in Hyderabad div. nine-tenths of the cultivated area depends on canal irrigation. The vast Lloyd barrage across the Indus at Sukkur, completed in 1932, was found in 1949 to be in need of repairs and reconditioning, which were at once put in hand, for it feeds an immense system of irrigation canals that waters some 5,000,000 acres of otherwise barren land, and was extended to serve some further half million acres following the repairs.

A further barrage across the lower Indus near Kotri, which was opened in 1956, was designed to irrigate 2-75 million acres south of that served by the Sukkur barrage: there are other barrages on the Chenab and the Jhelum in the Punjab, and the total artificially-watered area in W. Pakistan exceeds 20 million acres. Wheat is the principal crop in the W., with cotton, rice, gram, millet, maize, barley, oil seeds also grown. Citrus fruits are widespread in Punjab, and a great variety of other fruits in Quetta and Dera Ismail Khan divs. Large herds of sheep, goats, camels, and horses are kept.

In East Pakistan irrigation is scarcely necessary; periodic flooding constitutes a more serious



problem. Here the principal crop is rice, and 80 p.c. of the world's jute comes from E. Pakistan. Sugar, tobacco, and tea (particularly from Sylhet), oil seeds, fruit, and coconut palms are also important; cattle and goats are kept. Fishing forms a very important occupation: fish and fish products are exported, especially to India.

Industrially, Pakistan is limited by a serious shortage of power resources and a great absence of minerals. In W. Pakistan there is coal and chromite, gypsum, limestone, and sulphur, which are all exploited. Petroleum is found in Peshawar div., and there is a refinery at Peshawar city. The tapping of natural gas is being developed at Sui, Quetta div. E. Pakistan is virtually without minerals.

#### Location of Industries

The industries accordingly derive mainly from agricultural processing; manufacturing is almost exclusively the monopoly of W. Pakistan, where railway workshops, general engineering, cement, sawmills, gun-making, and other enterprises are established. Cotton cloths, hides and skins are exported in great bulk. In E. Pakistan the manufacture of local jute is expanding at Dacca, but most goods from the E. are from small cottage industries: muslins (especially the famed Dacca muslin), brassware, mats, and filigree work.

Most of the big towns are in the W.; they include, besides Karachi, Lahore, Hyderabad (Sind), Rawalpindi, Multan, Lyallpur, Sialkot, Peshawar, and Quetta. The capital of E. Pakistan is Dacca; Chittagong is the chief port.

**COMMUNICATIONS.** The railways are divided into two systems: the North-Western Railway, 5,440 m., and the East Bengal Railway, 1,702 m. Road mileage totals 58,600, of which less than 5,000 m. are metalled. In E. Pakistan the road system is very backward, but the navigable channels of the inland waterways provide ready and cheap transport, and are freely used by steamers and small craft.

The three ports of Pakistan are Karachi in the W., and Chittagong and Chalna (or Port Jinnah) in the E. Karachi is an important international air centre, and there are inland air links between most of the cities.

**PEOPLE.** The lack of any homogeneity of blood in Pakistan is partly compensated for by the religious uniformity throughout the country. Over 85 p.c. of the

population are Muslims; most of the remainder are Hindus. There are tiny minorities of Christians, Sikhs, and others. The official languages are Urdu and Bengali; other principal languages are Punjabi, Lahnda, Pushtu, Sindhi, Baluchi, and Brahui. English is widely used in official business and in the universities.

**HISTORY.** The events leading up to the formation of Pakistan are described under India: Southern Sub-Continent of Asia. The name itself, the invention of Choudhary Rahmat Ali (1897-1951), dates from the time of the Round Table Conferences of 1930-31, and is derived from the names of the predominantly Muslim areas of India: Punjab, Afghanistan and N.-W.F.P., Kashmir, Sind, Baluchistan (*stan*=land, Urdu), these being the areas proposed as a separate Muslim state. The Urdu word *pak* (=pure) gave the title added significance. The movement for Pakistan at first attracted little attention in either India or the U.K.; but in 1940 the Muslim League, under the leadership of Mohammed Ali Jinnah (1876-1948), passed a resolution declaring that the Muslim majority regions must be grouped "to constitute independent states"; and after partition in 1947 Jinnah was appointed first governor-general of Pakistan.

The government of the new country found itself faced with violent differences of opinion between those who wanted a constitution tied to Muslim religious conventions, and those who favoured a more liberal attitude. It was Feb. 29, 1956, before a constituent assembly passed a draft constitution; and on March 23, 1956, Pakistan was proclaimed an Islamic republic. It remained a full member of the British Commonwealth.

The constitution provided for a Muslim president as head of state, and a single chamber legislature of 300 directly-elected members, 150 for E. and 150 for W. Pakistan; the national assembly must meet at least twice a year, one session being held in Dacca. The assembly was given the right to provide for a second chamber at a future date. While declaring that no law repugnant to Muslim tradition was to be enacted, the constitution also safeguarded the rights of non-Muslim minorities, and declared against discrimination. It provided for a separate judiciary, and granted the vote to citizens over the age of 21.

Pakistan became a party to the South-East Asia Defence Organization in Feb., 1956.

*Select bibliography.* India, Pakistan and the West, T. G. P. Spear, 1949; Pakistan and Islamic democracy, I. H. Qureshi, 1950; The Making of Pakistan, R. Symonds, 3rd ed., 1951; Pakistan, the birth of a new Muslim state, G. E. Heyworth-Dunne, 1952; A Continent Decides, Lord Birdwood, 1953; The Cultural Heritage of Pakistan, S. M. Ikram and T. G. P. Spear, 1955.

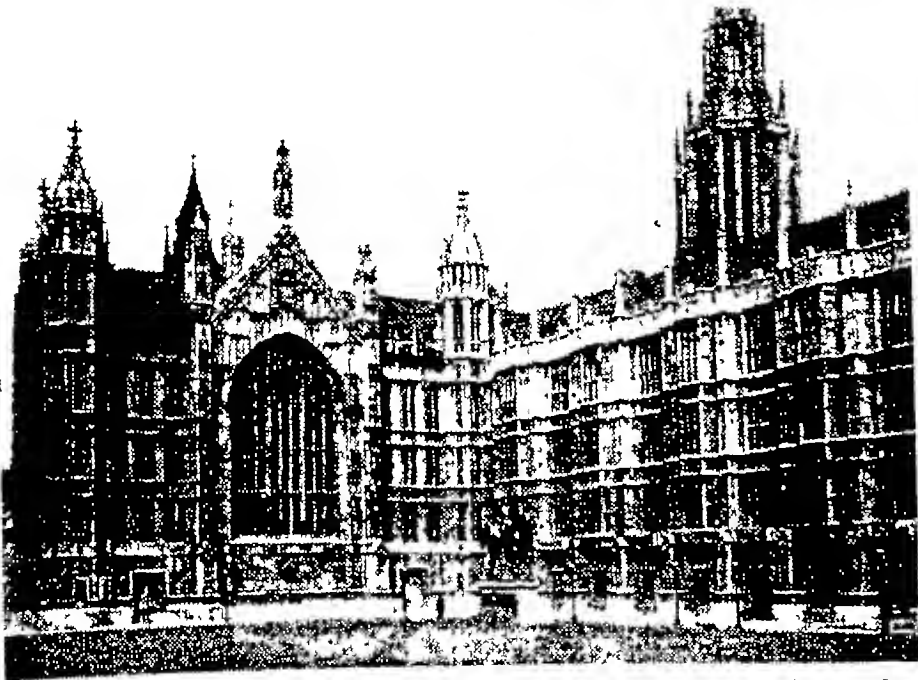
**Pakokku.** Dist. and town of Upper Burma, in the Magwe div. The dist. lies N. of Minbu, W. of the Irawadi. Oil seeds, pulses, and a little rice are grown; and it includes the Yenangyat petroleum fields. Pop. (est.) 600,000.

The town is on the right bank of the Irawadi, 10 m. below the point at which the Chindwin joins it, and is the centre for the timber trade in logs floated down the Chindwin; it also builds boats. Pop. (est.) 30,000.

**Palace of Peace.** Building at The Hague, the Netherlands, built to house the permanent court of arbitration created by the peace conference of 1899, promoted by Tsar Nicholas II. In 1903 an endowment of £300,000 for its erection was made by Andrew Carnegie (*q.v.*), and the building, designed by the French architect Cordonnier, begun in 1907, was inaugurated on Aug. 28, 1913, by Queen Wilhelmina of the Netherlands in the presence of the representatives of 42 states. Its grounds cover 16 acres, and the building, in brick and stone in the Flemish-Dutch style, is about 260 ft. square.

**Palace Theatre.** London playhouse, in Cambridge Circus, W.1. Planned as the home of British opera by D'Oyly Carte, it was designed by T. E. Colcutt, and opened as the Royal English Opera House, Jan. 31, 1891, the first production being Sullivan's *Ivanhoe*. A few months later Sarah Bernhardt gave a season. The interior was then altered, and the house reopened in 1892 as the Palace Theatre of Varieties. Maud Allan made her London début here in 1908, and Pavlova in 1910. Herman Finck was musical director 1900-21. During the First Great War it became the home of light musical shows, and thereafter was variously used for seasons of music hall, foreign plays, plays in English, special films, etc. The theatre seats 1,380.

**Palace Yard, OLD.** Open space between the British houses of parliament and Henry VII's



Palace Yard, Westminster. The Old Yard, looking towards S. Stephen's Hall, with peers' entrance on right

chapel. Here Guy Fawkes and Raleigh were executed and Prynne was pilloried. Chaucer and Ben Jonson are believed to have lived in houses that once stood near. The statue of Richard Coeur de Lion by Marochetti was erected in 1860. The peers' and visitors' entrances to the houses of parliament are in Old Palace Yard. New Palace Yard is a railed-in space N. of Westminster Hall, forming the members' entrance to the house of commons. See Westminster.

**Palacio Valdes**, ARMANDO (1853-1938). Spanish novelist. He was born at Entralgo, Asturias, Oct. 4, 1853, becoming a journalist and editor of *Revista Europea*, in which his first essays appeared. His first novel, *El Señorito Octavio*, 1881, was followed by *Marta y Maria*, 1883; *El Cuarto Poder* (The Fourth Power), 1888; *La Hermana San Sulpicio*, 1889; *La Espuma* (Froth), 1892; *La Aldea Perdida*, describing his native region, 1902; *Los Carmenes de Granada*, 1928; *Tiempos Felices*, 1933. His fiction shows a deep love of nature and sympathy with the working people, and is sometimes satirical at the expense of the more frivolous members of society. He died in Feb., 1938.



A. Palacio Valdes, Spanish novelist

**Paladin** (Lat. *palatinus*, belonging to a palace). Word, a variant of palatine, meaning a courtier or member of the royal household. It is known, however, especially because it was used for the 12 legendary figures—peers, as they are called—who are supposed to have gone with Charlemagne to Spain. Owing to the glamour that surrounded them the word was afterwards used for a knight

are presumably the descendants of ancestors which lived in an earlier period of the earth's history, and were themselves descended from still older types.

The vegetation of which we know most is that of the coal period. Palaeobotanical research has revealed the existence in the forests of the coal period of genera exhibiting a combination of characters which are now distributed among different families or groups. These extinct generalised types demonstrate a close affinity between certain groups which in their modern representatives show little indication of relationship.

The oldest rocks in the earth's crust contain no fossil plants, but their absence does not necessarily mean that there was no vegetation when the strata were in process of formation; probably both animals and plants existed, but such remains as were entombed in the oldest sedimentary rocks have been rendered unrecognizable, or completely destroyed in the course of the repeated foldings of the earth's crust. The most ancient undoubted plants so far discovered are more highly organized than one would expect of members of a primitive flora; their advanced stage of differentiation suggests that they were preceded by earlier phases of plant evolution.

There were no flowering plants in the forests of the carboniferous epoch, but many trees were members of the class Pteridophyta, which includes the ferns, club mosses (*Lycopodium*), and other genera, horsetails (*Equisetum*), and other types. Many of these plants had the dimensions of fairly large trees, and differed considerably both in size and their greater complexity of structure from their relatively small and herbaceous descendants at the present day. There were also many plants in the

of exceptional gallantry. See Palatine; Roland.

**Palaeobotany** (Gr. *palaios*, ancient; *botanē*, plant). Study of the plants of former ages. After the publication of Darwin's *Origin of Species* in 1859, the investigation of the remains of extinct animals and plants assumed a new significance. The plants of today

coal period, which in some respects presented a close resemblance to some existing ferns, but differed from them in certain characters, and, more especially, in the production of true seeds; these genera are included in the class Pteridosperms instituted for palaeozoic fern-like plants bearing seeds. The Pteridosperms are of special interest, because the production of seeds is now the monopoly of plants higher in the scale than the ferns and their allies. See Botany.

**Palaeogene Deposits**. In geology, name given to Older Tertiary deposits. See Tertiary.

**Palaeogeography**. Study of the distribution and changes of land and sea areas and variations in climatic conditions in past geological times. The character of the rocks laid down yields information regarding the conditions under which they were deposited—in shallow water, lakes, or as sand dunes, etc. The fossil content indicates changes in conditions, as well as dating the age of deposits, and relates the science to that of Palaeontology (q.v.).

**Palaeography** (Gr. *palaios*, ancient; *graphein*, to write). Study of ancient handwriting. It concentrates upon the forms of writing in inscriptions on plant materials, such as papyrus, vellum, and paper. That branch of it which concerns inscriptions on hard materials, such as stone, metal, and wood, is called epigraphy. An undated MS. can often be assigned at least an approximate date from the style of its handwriting, which is also of decisive importance in determining the genuineness of documents. Ancient MSS., usually in the form of rolls, tablets, or books, also occur on leaves, bark, linen, potsherds, and wood boards coated with gesso or wax. The writing implements were pointed, split, or frayed reeds, stiles and quills, the hairbrush being of Chinese invention. The scripts tend to become running or cursive hands, as distinct from the stiffer and more formal characters demanded by the art of stone-chiselling. Hence the hieroglyphic characters of Egyptian stone inscriptions passed, even in the 1st dynasty, into hieratic, and in the XXVIth dynasty into demotic.

Greek palaeography is traceable through numerous examples, especially on papyrus and vellum, from the 4th century B.C. down to the introduction of printing into Europe. Beginning with uncial or capital letters, it passed into minuscule or small-hand. Of this



two styles were in use : book-hand, which displaced papyrus by vellum in the 4th century of our era, and non-literary cursive, which was employed for the ordinary business of life. Slavonic hands descend from 9th century Greek forms.

Latin palaeography is of wider importance, because it deals not only with Roman scripts, uncial and minuscule, but also with those national hands which grew out of them in every part of Europe. By 800 there emerged the Carolingian hand, greatly influenced by Alcuin of York's youthful familiarity with English writing. This became the standard calligraphy of W. Europe, as distinct from the rugged Germanic black letter, until the dissemination of the Italian hand during the Renaissance. The non-literary cursive and the court-hands, which developed side by side with the book-hands, are the precursors of the various modern systems of calligraphy, which in their turn are being affected by the growing use of the typewriter.

The methods of European palaeography have been utilised for the study of non-European hand-writings. Among these the most important are Hebrew, Syriac, Coptic, Arabic, Persian, Indian, Pali, and Chinese. Consult History of the Art of Writing, W. A. Mason, 1921.

**Palaeolith** (Gr. *palaios*, ancient; *lithos*, stone). Stone implement of the Old Stone or Palaeolithic (*v.i.*) Age.

**Palaeolithic**. Term introduced by Lord Avebury in 1865 to denote the older phase of the prehistoric stone age. This is the age of hunters and food-gatherers, of chipped flint tools and weapons. It coincided with the Pleistocene geological era, with its four successive ice ages, when ice sheets covered most of Britain, Scandinavia and Germany, the Alps and the Pyrenees. The Palaeolithic period perhaps covers some 500,000 years. During these long ages man progressed at an infinitely slow rate. In the Lower and Middle Palaeolithic two types of culture emerged, one distinguished by the use of the hand-axe made of a flint core from which pieces had been chipped or flaked off, the other by the use of tools fashioned from flakes struck from a core. The relative position of stratified remains in caves and their association with the bones of extinct animals such as the mammoth and the woolly rhinoceros has enabled prehistorians to build up a sequence of subdivisions of the period, though there is overlap-

ping, and various core and flint cultures may be contemporary.

The Mousterian culture was the prevalent one as the last Ice Age (the Würm glaciation) began. In the break between Würm I and II, when there was a temporary recession of the ice, the Mousterians disappeared as a new type of man, probably from Africa, arrived in Europe. This was *Homo Sapiens*, bringing a new culture which ushered in the Upper Palaeolithic age. Man now had a larger variety of tools, some of bone and antler. He began to fish as well as to hunt, and his artefacts show the first glimmerings of artistic impulse. The final Palaeolithic phase in Europe is the Magdalenian, remarkable for the development of cave art such as that discovered at Altamira (*q.v.*).

**Palaeologus**. Name of a Byzantine family, which founded the last dynasty of East Roman emperors, lasting from 1261 to 1453. Michael VIII (1261-82), emperor of Nicaea, overthrew the Latin empire, and recovered Constantinople from Baldwin II. A successful soldier and administrator, he in vain endeavoured to heal the schism between the Eastern and Western Churches. He was succeeded by Andronicus II and III (*q.v.*). John V (1341-91), who until 1355 had to acknowledge John Cantacuzene (*q.v.*) as emperor, was afterwards dependent upon the sultan of Turkey for his position. Manuel II (1391-1425), immediately after his accession, became engaged in hostilities against the Turks. Alarmed for the safety of Constantinople, which was being besieged by Bayazid, Manuel sought the aid of Western Christendom. In response to his appeal, an army commanded by the Roman emperor Sigismund set out to help him, but Bayazid gained an overwhelming victory at Nikopolis in 1396. Manuel then came to terms, but the capital was in constant peril until the defeat of Bayazid at Angora in 1402. From that time during the reign of Mohammed I, the son of Bayazid, Manuel was at peace.

On the accession of Murad II, Constantinople was again besieged, and Manuel, forced to agree to a humiliating treaty, retired to a monastery, where he occupied himself with the composition of theological works. John VIII (1425-48), to stem the threatened advance of the Turks, endeavoured to obtain help from the West by renewing the attempt to heal the ecclesiastical schism. An agreement was

actually concluded in 1438, but was rendered useless by the opposition of the Greek clergy and the people of Constantinople. The last representative of the family was Constantine Palaeologus (*q.v.*), with whom the East Roman empire came to an end in 1453.

**Palaeontology** (Gr. *palaios*, ancient; *onta*, beings; *logos*, science). Study of past life on the globe, especially as revealed by fossil remains. The term embraces the study of fossil plants, palaeobotany (*q.v.*), as well as of fossil animals, palaeozoology, but is often used of the latter alone. The description of the fossil organisms themselves is called palaeontography.

Palaeontology subserves the invaluable purpose of establishing the relationship in time of the stratified rocks. Documentary evidence furnished by fossils shows that the earth's crust has passed through three great time-divisions or eras, called Palaeozoic, Mesozoic, and Cainozoic, to denote ancient, middle, and recent life respectively.

It has supported with overwhelming evidence the view propounded by Darwin that the history of life is one of orderly development. Life cannot be traced to its first beginnings, and many links connecting species with species, or class with class, are missing. But some remain however, such as *Archaeopteryx*, which helps to explain how reptiles developed into birds.

Geographical distribution of animals and plants is the result of migrations, often in remote geological time. The presence of opossums in S. America, all other pouched mammals being confined to the Australasian region, becomes intelligible when it is shown that marsupials originated in Europe, whence they spread to mesozoic America, probably reaching Australia over an Antarctic land-bridge. The lemurs of Madagascar are explained by an eocene land-bridge which connected the island with either Africa or India.

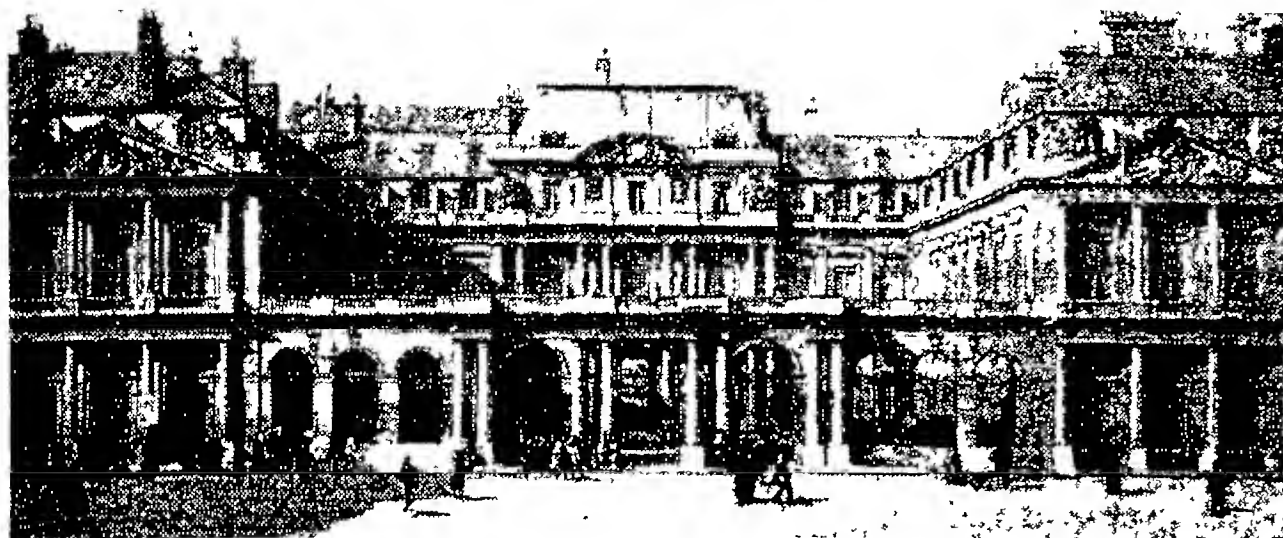
Study of fossil forms throws light upon the changes from epoch to epoch in the relation of land to water, variations of climate and rainfall, etc.; this is the study of palaeogeography. The presence of the hippopotamus in pliocene East Anglia betokens a tropical temperature; that of the woolly rhinoceros in the Thames valley later on proves sub-arctic conditions. Fresh-water organisms have enabled vanished lakes and

ivers to be mapped, while marine faunas in overlying beds point to forgotten seas.

Lastly, palaeontology yields interesting evidence concerning the physical history of man. The fossil bones of primeval man and his forerunners are rare. But when associated with those of mammals long extinct they enable valuable

**Palagonite.** Dark yellowish-green alteration product of glassy basaltic lava. It usually occurs in ash or tuff beds, and also among the red clays on the bottom of the sea. It is found in Iceland, Sicily, and the Canary Isles.

**Palais Royal.** Palace in Paris. It was designed by Lemercier for Richelieu. The original building,



Palais Royal, Paris. The main building of the old Palais Royal, now occupied by, and called, the Conseil d'État

conclusions to be drawn, not only concerning the great antiquity of the human race, but also concerning the environment in which man wrought out to a final issue the age-long struggle for the primacy of the world. See Evolution; Fossils; Geology; Stratigraphy; consult Textbook of Palaeontology, K. A. von Zittel and C. R. Eastman, vol. 1, 2nd ed. 1913, vol. 2, 1902; The Age of Mammals, H. F. Osborn, 1910; Invertebrate Palaeontology, H. L. Hawkins, 1920; Outlines of Palaeontology, H. H. Swinnerton, 1947.

**Palaeozoic.** Name given to the era containing the earlier fossiliferous geological systems from the Cambrian to the Permian. The term includes the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Permian periods, and rocks of these periods contain fossils of the earliest known forms of life. See Cainozoic; Mesozoic.

**Palaephatus.** Greek writer, under whose name is preserved a small work entitled Concerning Incredible Things. It contains a collection of myths, accompanied by allegorical interpretations. He is supposed to have been a native of Egypt or Athens, and to have lived in the 3rd century B.C. He has also been identified with Palaephatus of Abydos, a friend of Aristotle and the author of several historical works. The work was at one time a favourite schoolbook.

**Palaestra** (Gr. *palaistra*, wrestling school). Word used in various senses: (1) A place where Greek boys were taught gymnastic exercises; (2) part of the gymnasium reserved for wrestling bouts; (3) later, the gymnasium itself.

begun in 1629, consisted of an entrance front, with a courtyard enclosed by buildings behind it, continued in a main court, with gardens, now public, at the rear. During Richelieu's life it was known as the Palais Cardinal. The palace suffered from restoration, and in 1871 part of it was destroyed. It was subsequently the home of the Orléans family, and later housed the *Conseil d'État*.

**Palamedes.** In Greek legend, a hero who fought on the Greek side in the Trojan War, noted for his sagacity and inventiveness. He is not mentioned in Homer. Hated by Odysseus, he was put to death on a trumped-up charge of treachery. Pron. Palla-mee-deez.

**Palamkotta, PALAMCOTTAH, OR PALAYAM-KOTTAL.** Town of Madras state, India, in Tinnevely dist. An inland town. 90 m. S.S.W. of Madura, it is the district headquarters, and an important road junction linked by road with Tuticorin, Madura, and Madras. Pop. (1951) 40,010.

**Palanpur.** Town of Bombay state, India, headquarters of the district of Banas Kantha. It lies 83 m. N. of Ahmadabad, and is a railway junction. Pop. (1951) 22,629.

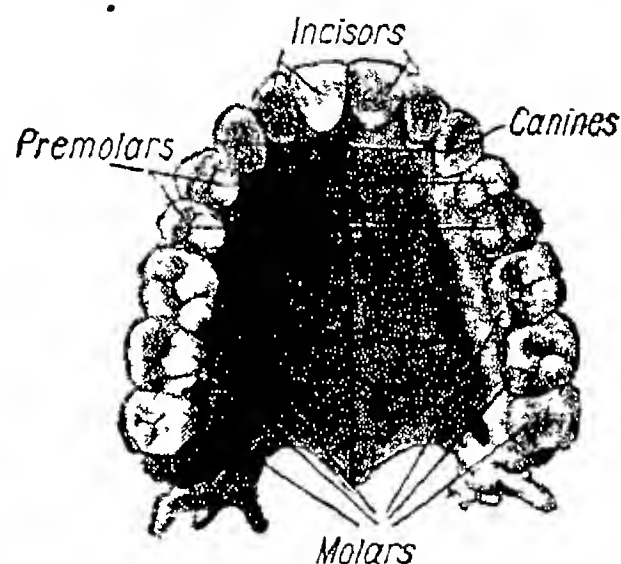
Palanpur was formerly the capital of a princely state of the same name, area 1,794 sq. m., which in 1948 was merged in Bombay prov. (later state).

**Palanquin** OR PALKI (Skt. *paryanka*, a bed). Eastern conveyance for one person, in the form of a litter, borne on the shoulders of two, or more generally four men, by means of poles passed through rings at each end. Originally open,

it is now an enclosed box, with sliding panels or latticed shutters.

**Palar.** River of Mysore and Madras, India. It rises in Mysore, cuts through the E. Ghats and reaches the Bay of Bengal, 50 m. S. of Madras city. Usually all the water is used for irrigation, and none flows to the sea. It supplies the Kolar goldfields. The chief engineering work is the anicut or dam at Arcot. The length of the river is 230 m.

**Palate.** Roof of the mouth, separating the cavity of the nose from the mouth. It consists of the hard palate in front, formed mainly by the two palate bones, and the soft palate behind, consisting of muscular tissues between two layers of mucous membrane. It is prolonged into a pointed structure, the uvula, which hangs downwards and can be seen at the back. The soft palate shuts off the pharynx from the cavity of the mouth. Inspection of this will give information as to the health of sinuses and neighbouring tissues. During the



Palate. Diagram indicating relative positions of the teeth and the palate bones

act of swallowing food or of coughing, the soft palate is drawn up so as to cover the entrance of the nasal cavity. See Anatomy; Cleft Palate; Mouth.

**Palatinate** (Ger. *Pfalz*). Area in S.W. Germany. This historic name comes from its ruler, the most important of palatine counts deputising for Frankish monarchs before Charlemagne. In 1156 the



Palanquin of the type which is in common use in China



emperor Frederick I invested his brother Conrad with the territory and the title of count palatine of the Rhine. As a principality the country covered about 3,300 sq. m.; as part of Bavaria before the Second Great War it covered 2,120 sq. m. It was ruled from Heidelberg, where its sovereigns, from 1,228 members of the Wittelsbach dynasty, developed political and cultural activity. They produced two emperors, also the hapless "winter king," Frederick, son-in-law of James I of Great Britain. They introduced Protestantism in 1556.

France laid claim to the Palatinate inheritance and devastated the country in 1689. In 1777 the Bavarian Wittelsbachs united the Palatinate with their mainlands, part of which, around Regensburg, had been called the Upper Palatinate. Temporarily joined to France, the Palatinate, after ceding parts to Baden, Hesse, and Prussia, was set up as a Bavarian province in 1815. It was occupied by French forces after both Great Wars. In 1946 it became part of the West German *Land* of Rhineland-Palatinate. Wine and tobacco are produced. The capital is Speyer (Spire).

**Palatine** (Lat. *palatium*, a palace). Literally, someone belonging to the palace, and therefore a servant of the ruler. In the Roman Empire the title was given to certain officials sent out by the emperors to discharge special duties, and this use passed into France and Germany, where counts palatine appeared about the 8th century. These were more directly the representatives of the sovereign than were the ordinary counts. Their territories were called palatinates. The most important was the one that grew into the Palatinate of the Rhine.

The word, used in practically the same sense, passed into England soon after the Norman Conquest. The earls of certain counties, generally those on the borders, such as Durham and Cheshire, were given special privileges, and these were known as counties palatine. Other counties palatine were Lancashire, given the privilege in the 14th century, Shropshire, Pembrokeshire, and Kent. Durham, Cheshire, and Lancashire were, however, the only ones that retained their special privileges for any length of time, and traces thereof still remain.

**Palatine Hill** (anc. *Palatium* or *Mons Palatinus*). One of the seven hills of Rome. The name is of uncertain origin. The Palatine,

168 ft. high with precipitous sides, dominated the crossing of the Tiber and was the site of the original town ascribed to Romulus. The Lupercal (cave of the wolf), thatched hut, and fig-tree associated with the hero were preserved as sacred memorials. Excavation has recovered burials and huts dating from the 8th century B.C. which show that the earliest settlement was a primitive village.

In Republican times the hill was a residential quarter; Augustus and Tiberius built palaces on it and Nero's Golden House extended from the Palatine to the Esquiline. The Flavian dynasty built a vast palace, the *Augusteum*, to which Septimius Severus made important additions. The Palatine was also the site of several temples, including that of Cybele, the mother of the gods.

Systematic excavation of the ruins, conducted by the Italian government, began in 1870.

**Palau Islands.** Alternative form of Pelew Islands (*q.v.*), a group of islands in the Pacific.

**Palaung.** Burmese name for aboriginal tribes of Mon-Khmer speech in upper Burma. Calling themselves Ta'ang, numbering about 150,000, and allied to the Wa, they are hill-dwellers, mostly in Tawngpeng, Mongmit, and other Shan states, as well as the E. of the Ruby Mines dist. They were driven out of the Irawadi and Mekong headwaters in recent times by Shan and Kachin pressure. Outside their chief settlements they are usually called Palés.

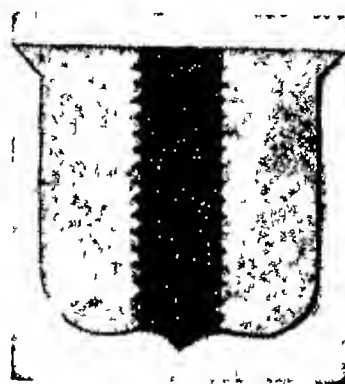
**Palawan** or PARAGUA. Island of the Philippines. Situated to the W. of the more important islands of this group, it is about 270 m. long and from 4 m. to 15 m. wide, and has an area of 4,550 sq. m. Its dependent islands, which stretch away to Borneo, cover an additional 1,210 sq. m. Palawan is mountainous and well wooded and has a number of short, rapid rivers and excellent natural harbours. Resin and timber are exported.

In Japanese occupation since their conquest of the Philippines in May, 1942, Palawan was developed as an air base which controlled the Sulu sea and also the sea lanes between Japan and her conquests in S.E. Asia and the E. Indies. U.S. troops landed on the island March 1, 1945, and, meeting little opposition, seized Puerto Princesa, the chief town, and two airfields near by. Five survivors from a camp near Puerto Princesa, where 150 U.S. army

and navy prisoners had been held since the fall of Bataan, told how just before the U.S. landings the prisoners had been herded into a barracks which the Japanese had drenched with paraffin and set on fire, machine-gunning and bayoneting those who tried to break out. The R.A.A.F. had a base on Palawan in the last months of the Second Great War.

**Palazzolo Acreide.** Town of Italy, in Syracuse prov., S.E. Sicily. It is 27 m. W. of Syracuse city on the main road to Palermo. An ancient town founded by Greeks from Syracuse as *Acrae* in 664 B.C., it was later known as *Placeolum*, *Balensul*, and *El-Akrat*. Tombs of all periods, a small theatre of late Greek origin, and a temple of the dead occupy the old acropolis. Pop. (1951) 11,877.

**Pale.** In heraldry, a broad band, placed vertically, and occupying a third of the shield. It is



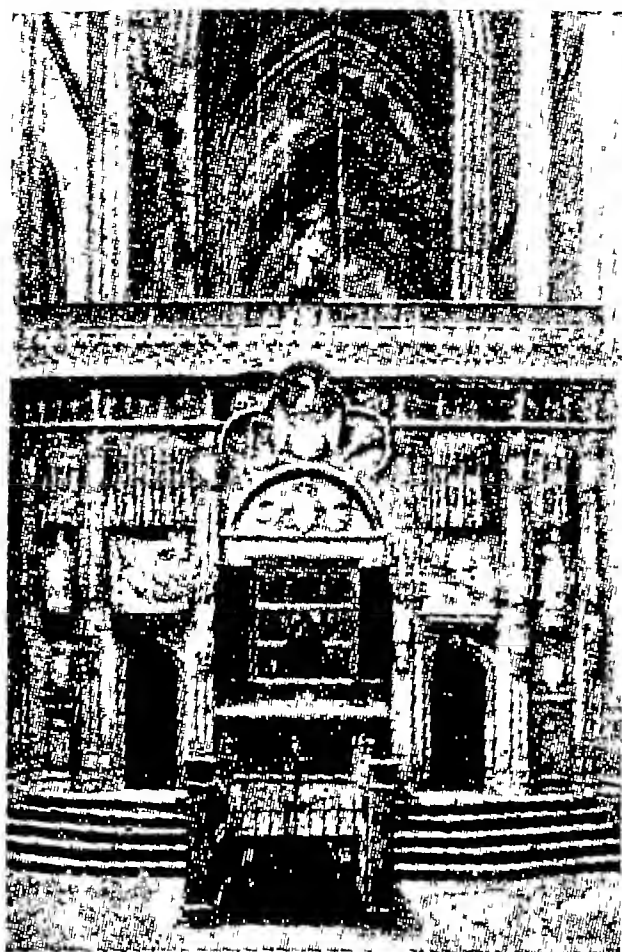
Pale, in heraldry

one of the ordinaries (*q.v.*). If a shield is divided down the middle by a vertical line it is said to be per pale. A shield divided by a number of vertical lines is paly, the number of divisions being specified, but if there are two such lines the shield is described as tierced or tiercy. A row of charges placed one above the other are described as in pale. See Heraldry col. plate.

**Pale** (Lat. *palus*, stake). Term applied to that part of Ireland, in Dublin, Kildare, Meath, and Louth, where English law prevailed as opposed to the Celtic portion of the island. The Pale dated from the time of Henry II, though it did not bear the name until the 14th century. In the time of Henry VIII the boundary was formed by Dalkey, Tallaght, Kilcullen, Naas, Kilcock, Sydan, Ardee, Derver, and Dundalk, but with the complete conquest of Ireland under Elizabeth the Pale disappeared. The term is now applied to any portion of a country whose inhabitants live under a different system of government from that of the country generally. "Outside (or beyond) the pale" remains a figurative phrase.

**Palembang.** Town, river, and district of Sumatra, Indonesia. The town is 54 m. from the sea in the S.E. of the island; below the town the river, also called the Musi, flows through an extensive

area of marshland. The chief commercial centre of the island, it trades chiefly in coffee and pepper, particularly with Malays, Arabs, and Chinese, who reach the city by water. Many of the houses are



Palencia, Spain. Interior of the cathedral of S. Antolin, showing entrance, at foot of altar, to cave in which the saint lived

erected upon floating platforms. A fine mosque, 1740, and an ancient palace are of interest. Much of the district, once a sultanate, is forest; here are oil wells and refineries. District area 33,342 sq. m. Pop. (est.) dist., 1,100,000; town, 110,000.

The Dutch set up a trading post at Palembang in 1616, and long enjoyed a monopoly of the pepper trade here. The sultanate, occupied by the British 1811-14 during the Napoleonic wars, was brought under Dutch control in 1825. During the Second Great War, Japanese parachute troops landed at Palembang, Feb. 14, 1942, followed the next day by seaborne forces. There was fierce fighting round the town, which was captured on Feb. 16, after the oil wells and refineries had been wrecked. Palembang remained in Japanese occupation until Sept., 1945.

**Palencia.** Prov. of Spain. It is in the N.W., S. of the Cantabrian Mts., from which many streams drain to the Pisuerga, which forms the N.E. boundary and crosses the S.E. of the province. The S.W. contains the marshy Laguna de la Nava in the Tierra de Campos. The N. is forested, and cereals, flax, wine, and olive oil are produced in the S. valleys. Manufactures include rugs, paper, porcelain, and leather. Three rly. routes converge on the Pisuerga valley close to the

S. boundary. Palencia was formed from part of Old Castile. Area, 3,093 sq. m. Pop. (1950) 233,290.

**Palencia.** Walled city of Spain, the ancient Pallantia. It is the capital of Palencia prov. and stands on the Carrión river, 10 m. above its confluence with the Pisuerga, and on the E. edge of the treeless, windswept Tierra de Campos. The late Gothic and Renaissance cathedral was begun in 1321, and has a valuable collection of Flemish tapestries. The University, founded in 1208, was transferred to Salamanca in 1239. Shawls, blankets, chocolate, and bricks are manufactured. To the N.E. of the town is the Dominican convent of San Pablo, founded in the 15th century. The capital of the ancient Vaccae, Palencia in the 12th century became the seat of the Castilian kings and of the Cortes. Pop. (1950) 41,769.

**Palenque.** Important ceremonial centre of the classic period in the state of Chiapas, Mexico, containing dated monuments covering the period A.D. 638-785. It is notable for the elegance of its buildings, and the beauty of its low relief tablets sculptured in fine limestone or modelled in painted stucco. The largest group of buildings, called the palace, includes a high, square tower which is unique. A fine series of pyramid temples contains the reliefs. One of these, the temple of the inscriptions, is notable for one of the few Maya tombs beneath a pyramid. A stairway, which had been blocked, leads down to a chamber decorated with stucco reliefs in which the



Palenque, Mexico. The palace, from the western court

dead man lay, with a great treasure of jade, in a stone sarcophagus covered with a finely carved slab. Consult *The Ancient Maya*, Morley and Brainerd, 1956.

**Paléologue, MAURICE GEORGES** (1859-1944). French diplomatist and historian, born in Paris, Jan. 13, 1859. Minister in Sofia 1909-13, he was then ambassador in St.

Petersburg until the revolution of 1917, and later permanent under-secretary of the French Foreign office. As biographer of de Vigny, Talleyrand, and Metternich, and with his own memoirs, he won fame. He was elected to the Academy in 1928. He died Nov. 21, 1944.

**Palermo.** Prov. of Italy, in N. Sicily. It is hilly, the Madonia Mts. culminating in Monte San Salvatore, 6,267 ft. Rlys. run from the city of Palermo in both directions along the coast, and S.W. and S.E. across the prov. Chief products are sulphur, marble, wine, figs, lemons, oranges, and olives. There was fighting in the prov. as a result of Garibaldi's expedition in 1860. Pop. (1951) 1,019,796.

**Palermo.** Seaport and city of Italy, capital of Sicily and of the prov. of Palermo. On the N. coast of the island on the W. of the Bay of Palermo, surrounded by a fertile plain, the Conca d'Oro, it is backed by an amphitheatre of mountains, the chief heights of which are Monte Pellegrino and Monte Catalfano. The town is built in a quadrangle, with the E. side on the sea. The ruined fort of Castellamare adjoins the water. The cathedral, built by Archbishop Walter in the 12th century, contains imperial and other monuments.

Many of the famous buildings were Norman of the 12th century.

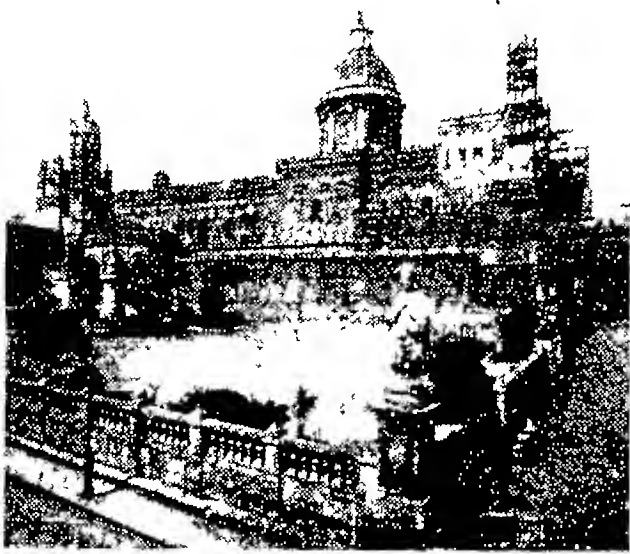
The character of the city was not seriously changed by Allied bombing of the Second Great War, though doors, windows, and roofs were damaged, two churches were destroyed, and the national library was badly damaged. The royal palace, begun by the

Saracens, with additions by the Norman rulers, had already been so altered that there are few traces of original work; it contains the Cappella Palatina, built by Roger II in 1143, reputed to be the most beautiful palace chapel in the world, with mosaics and carven roof. The churches of San Salvatore, San Giovanni degli Eremiti,



Palermo arms





Palermo. The Piazza del Duomo and the 12th century cathedral

La Martorana, and San Domenico, the 16th century archbishop's palace, the university (1805), observatory, and the national museum (seriously damaged) are notable. Fishing, boatbuilding, and ironworking are among the industries. Pop. (1951) 501,005.

The city, founded by the Phoenicians, was called by the Greeks Panormos, and became a Carthaginian stronghold, which was seized by the Romans in 254 B.C. It remained Roman until its capture by the Ostrogoths, from whom it was taken by Belisarius in 535. It fell into Saracen hands in 830, but in 1072 was taken by the Normans. Palermo was the scene of the

Sicilian Vespers (*q.v.*), 1282, which ended the Norman rule. A possession of Spain and the allied Bourbon house of Naples, the city vainly tried to cast off its thralldom, and as late as 1848 and 1860 was bombarded by its own sovereign, Ferdinand II. thereafter called Bomba. It was captured by Garibaldi, May 27, 1860. It was occupied by units of the U.S. 7th army, July 22, 1943, against negligible opposition from Germans and Italians. See also illus. in p. 1608.

**Palermo Stone.** Inscribed black granite slab in the Palermo museum, Sicily. Erected in Lower Egypt during the Vth or VIth dynasty, it is engraved with linear hieroglyphs, of which the beginning and end of each line have disappeared. A brief list of independent predynastic kings in Lower Egypt before Mena is followed by a record of the main event in every year during the reigns of early kings of united Egypt down to the Vth dynasty. The annals mention the foundation of towns, endowment of temples, erection of statues, wars and expeditions, biennial census returns, religious festivals, and the height of the Nile.

## PALESTINE: THE TRAGIC HOLY LAND

Basil Mathews, M.A. (Oxon.), E. Stern-Rubarth, Ph.D., and others

*This account of Palestine includes a review of its history from the invasion of the Egyptian kings to the British conquest of 1918 and the surrender of the British mandate in 1948. See also Crusades; Gaza; Israel; Jerusalem; Jews; Jordan (river and country); Negeb, etc.; and numerous Biblical references*

From 1923 to 1948 the historic name of Palestine was given to a country at the S.E. extremity of the Mediterranean Sea on the edge of Asia. It stretched between latitudes 29° 30' and 33° 15' N., with an average E. to W. width between coast and desert of 100 m. To the N. the geographical line dividing it from Syria was somewhat loosely drawn in 1920, but included within Palestine the Jewish colony of Metulla. To the E. the country was bounded by Transjordan, the river Jordan forming for all practical purposes a dividing line, which also ran through the middle of the Dead Sea. Across the S. boundary was the Egyptian province of Sinai. The area of Palestine was 10,150 sq. m.

The whole length is divided into four natural geographical strips running S. to N. in roughly parallel lines. Taking a transverse section of them, W. to E., they are: (1) the seashore; (2) the coastal plain, broken here and there by the jutting masses of (3) the hills of Judaea, Samaria, and Galilee; (4)

the Ghor, the rift of the Jordan valley, 1,300 ft. below the level of the Mediterranean where the river runs into the Dead Sea.

The climate of this area is as varied as the build of the land. Roughly, it has three divisions: the coast, the hills, and the Jordan valley. The west wind from the sea predominates; its characteristic is humidity. The east wind, from the desert beyond the Jordan, dry and exhilarating in the winter, is in the summer extremely hot and loads the air with dust. It is fortunately infrequent, except during mid-winter. The climate is in general terms sub-tropical, with two seasons, a rainy winter, mid-October to early May, and a dry, hot summer. The area enjoys a moderate rainfall—perhaps half the amount that falls in Lebanon and Syria to the north. Winter temperatures vary within wide limits; in the coastal region 90° F. has been recorded, and in the highlands bordering the river Jordan temperatures below freezing point. Summer

temperatures are everywhere high.

The population in 1947 was about 1,900,000 (exact figures unavailable, owing to illegal immigration, and to the movement of Arabs from and to the surrounding countries), as against 757,182 at the first census in 1922. The Jewish population grew in the same period from 83,749 to more than 608,000, the Muslim Arabs from roughly 600,000 to 1,143,000, and the Christians from 73,024 to about 145,000.

This remarkable development is due to three facts: (1) the Zionist movement, especially after the Basel congress of 1897 and under Theodore Herzl's leadership; (2) the Balfour Declaration (*q.v.*) of 1917, which promised the establishment in Palestine of a national home for the Jewish people; (3) the persecution of European Jews under the Nazi regime. Consequently, the number of Jews in Palestine increased by about 240 p.c.—compared with the last Turkish figures (1918), by 1,100 p.c.—while that of the Arabs grew by only about 20 p.c. This increase was achieved in the face of several legal and technical steps taken by the British mandatory authorities to curtail immigration and by a whole system of measures to prevent the illegal influx of Jewish settlers from the different countries that were, between 1938 and 1945, overrun by the Nazis.

The former division of Palestine's population into town dwellers, settled village peasants (*fella-hin*), and nomadic Beduin tribes (*hadari*), did not hold good any more. The European Jews brought with them higher technical and scientific knowledge and considerable capital, mainly contributed by co-religionists in Europe and America, and they soon developed not only scientific farming and gardening on the Californian pattern, but also a remarkable and widespread industry, constructing new towns, of which Tel Aviv, an entirely Jewish city founded as a small settlement in 1907 and with a pop. of over 180,000 in 1947, was the outstanding example.

**ARCHAEOLOGY.** The material remains of the human occupation of Palestine recorded and unearthed since 1870 by the Palestine exploration fund and other organizations have greatly elucidated and extended Biblical history. Many thousands of worked flints attest the presence of upland hunting communities at the Palaeolithic, and perhaps even the Eolithic, level





Palestine, centralised government in Jerusalem, and smote the desert tribes across Jordan eastwards, even as far N. as Damascus. The Philistines and the Phoenicians on the coast remained independent.

This was the greatest rule ever exercised in all history by and from Palestine itself. There was rapid decline of power under Solomon. After his death the kingdom was divided into Judah (roughly, Palestine) and Ephraim (roughly, Syria). From the 9th to the 6th cent. B.C., Assyria and Babylonia in their expansions and in their conflicts with one another and with Egypt continually won and lost and re-won the control of Palestine. Judah rebelled sporadically against the successive imperial tyrannies. Often the rebellion (*e.g.* against Assyria) was fomented by a rival power (*e.g.* Egypt). Yet Judah never secured real freedom; and the kingdom was destroyed in 586 B.C.

Outstanding and dramatic events in this kaleidoscope of conflict between empires over the Palestinian hills were: (a) the amazing escape of Judah in 701 B.C., when the Egyptians were defeated near Ekron, and Sennacherib's stupendous forces, which threatened to engulf the tiny kingdom, were defied in immortal scorn by Isaiah (Isaiah 10), and were swept out of existence (probably by pestilence) on the Philistine plain; (b) the Egyptian victory on the plain of Megiddo (607 B.C.), with the death of King Josiah of Judah, followed swiftly by the counter-defeat of the Egyptians by Nebuchadrezzar; and (c) the deportations of the Hebrews from Palestine to Babylon (usually called the exile).

#### End of the Exile

From the 6th century to the 4th, Persia, which under Cyrus captured Babylon in 539 B.C., took command of the provinces of Babylon, including Palestine, and set the exiles in Babylon free to go back and rebuild Jerusalem. Alexander the Great in turn overcame the Persian empire (333 B.C. onwards), and after his death and the division of his empire Palestine fell to Egypt and the dynasty of the Ptolemies, who fought the Seleucids controlling N. Syria across the prostrate body of Palestine. As these powers were enfeebled by the blows of Rome, the Jews, thrilled with patriotic and religious zeal, rose in revolt. The Maccabean family led them, 168 B.C., and the Jews won complete freedom in 143 B.C.

During these centuries of conflict and exile, ideas and ideals were wrought out, personalities sprang up, and literature was written which made Palestine of greater historical importance than even the vast empires of Babylon, Assyria, and Egypt. The little city of Jerusalem could have been hidden within the walls of one palace of Nebuchadrezzar, and it was repeatedly reduced to ruin. The hills of Judea were not much larger than Sussex, and they were hardly ever free from tyranny. But, robbed of all material power and of external freedom, the people received the conception of one almighty, invisible, wise Creator—God, who was also Shepherd; and the ideal of theocracy, omnipotent over all human rule, a rule of God to whom even the all-highest of Assyrian "frightfulness," Sennacherib, was—as Isaiah said—an axe or a wooden staff, the merest tool of the invisible King, who was to bring in His kingdom "under a Prince of Peace." Those new conceptions made Palestine the source directly of two of the great monotheistic religions of the world, Judaism and Christianity, and indirectly of the third, Islam.

#### The Roman Province

A new era began when Alexander the Great had swung Palestine out of the Asiatic into the Greek orbit of thought; an absolutely new world of original ideas. The centre of gravity of world history swung from E. to W., from Asia to Europe. Rome, fully armed, leapt into the Near East. The Maccabees had shared Palestine with an Arab tribe, the Nabateans. In 64 B.C. Pompey invaded the land, and in the following year reduced Jerusalem after a three months' siege. The *Pax Romana* now covered Palestine, but Herod the Great, as a prince under Rome, held Jerusalem through a five months' siege in 37 B.C.

Then in Palestine Jesus Christ was born, lived, and was crucified; and His followers proclaimed His Gospel. It was the Roman peace and the Roman roads that made the paths open for the rapid spread of the Christian faith from Palestine through the Empire.

The Jews still made political trouble in Palestine. In A.D. 70 Jerusalem was practically destroyed after a long siege. After the revolt of A.D. 132–5 Jerusalem was made a Roman colony. Through six centuries the Roman Empire held Palestine with a gradually relaxing grasp.

Then suddenly, out of Arabia, the scimitar of Islam swept, and in A.D. 635 the fall of Damascus yielded Palestine to Mahomedan rule. A fight of Heraclius against the Arabs on Aug. 20, 636, ended in his defeat. It was one of the decisive battles of the world's history, as it meant the clinching of the power of Islam. From the 7th till the 11th century Palestine was ruled by the Caliphs; and in the 11th century the Turks, coming from the N., became dominant.

The next period, that of the Crusades, 12th–13th centuries, is an involved and complicated story which ended in leaving the Turkish power still dominant over Palestine. Latin colonies in Palestine persisted after the Crusades proper were over.

A new terror swept down from the N. in the 13th century, in the shape of the Tartars, and the Mameluke or Tartar sultans ruled till the Ottoman Turks, in the 16th century, gained the upper hand and ruled Palestine continuously thereafter until defeated and dispossessed in 1918. The rule was similar to that all over the Turkish Empire. The population decreased. No progressive movements took place. In 1799 Napoleon invaded the country, mainly to defend Egypt. He failed to secure any real hold, though he crippled Turkish resources. Again, in 1831, Egypt, under Ibrahim Pasha, invaded Palestine and occupied it till 1840.

#### The First Great War

When Turkey became a belligerent in the First Great War, the safeguarding of the Suez Canal became a major preoccupation of British strategy. Attacks on the canal in Feb. and March, 1915, were defeated by the British, and plans were drawn up by Sir A. Murray, c.-in-c. of the Egyptian Expeditionary Force, to drive the Turks out of the peninsula of Sinai. The R.E.s began to build a rly. from the canal eastward towards Palestine. In April, 1916, the Turks, based on El Arish, suddenly attacked at Katia, but without effect, being themselves completely beaten in further fighting at Romani in Aug. In Dec., Murray occupied El Arish, and moved on to Rafah on the Palestine frontier, defeating the Turks here Jan. 9, 1917. Advancing into Palestine the British advanced towards Gaza, which they twice attempted to capture, without success. Murray was then replaced by Allenby who did not renew the offensive until after several months of inter-

sive preparation, during which time the Turks had greatly strengthened a front stretching from Gaza to Beersheba.

On Oct. 27, 1917, Allenby opened a land and sea bombardment of Gaza, but his main attack was on Beersheba, captured Oct. 31. He then proceeded to roll up the Turkish front from that side. Gaza fell on Nov. 7, and Allenby pushed N. without delay. Winning a considerable victory at El Maghar, Nov. 13, he held by the following day the junction of the Central Palestine and Jerusalem rlys. To make his left secure before advancing towards Jerusalem, he captured Jaffa, Nov. 17, then advanced from Er Ramle through the Judean hills towards Jerusalem, his engineers making the roads and the rly. required for this move.

The British right flank occupied Hebron on Dec. 6, and by nightfall two days later Allenby's men were only 1½ m. from Jerusalem. On the morning of Dec. 9, it was found that the Turks had evacuated the city, and at about noon it was formally surrendered by the mayor. Allenby made his official entry on foot, Dec. 11.

#### End of Allenby's Conquest.

But the Turks were only 4 m. distant, N. and E., and it was necessary for the whole British line, now about 50 m. long to the sea, to be consolidated. The Turks attacked with the object of retaking Jerusalem, but were beaten back on Dec. 28. Allenby then resumed a general assault which resulted next day in a total Turkish defeat. Advancing again, the British took Jericho, Feb. 21, 1918. During subsequent months, however, the desperate British situation on the Western Front led to serious depletion of Allenby's forces, and he was given replacements from Indian troops. This delayed his final offensive until Sept., 1918. Between Sept. 19 and 24 the Turkish armies were routed and destroyed. Arabs to the N. had occupied Deraa and intercepted the Turkish retreat, and by Sept. 29, British and Arabs were advancing towards Damascus, and the conquest of Palestine, E. of the Jordan, was complete. Turkish prisoners taken in the final offensive numbered 60,000.

Palestine remained under British military administration until July, 1920, when a civil administration was set up under a British high commissioner, appointed by the crown.

From then until May, 1948, Great Britain continued to administer

the country as mandated territory under the League of Nations, according to a constitution of Sept. 1, 1922, amended May 4, 1923, and put into force Sept. 29, 1923. This established the British high commissioner, who was simultaneously supreme commander and head of the executive council of three, assisted by an advisory council, which, because of persistent Arab refusal to participate in its election, replaced the legislative council of 10 appointed and 12 elected members provided for in the constitution. The first high commissioner, 1920-25, was Sir Herbert (later Viscount) Samuel; the last, Nov., 1945-May, 1948, was Sir A. G. Cunningham.

#### Palestine under Mandate.

This administration resembled that of a British crown colony and introduced many legal and social institutions on the British pattern, although Turkish civil law, largely based on the French, remained in force. Moreover, the Jewish and other religious communities possessed far reaching autonomy in education, employment, and labour policy, social services, and in respect of marriage and inheritance laws. For the Jewish community these powers were vested in the Jewish Agency; there was a Jewish Federation of Labour, Histadruth; a Labour Party, Mapai (abbr.); and a smaller, left-radical group, "Young Watchmen." Unofficially, a Jewish defence force, Hagana, was built up and equipped and trained with mostly smuggled arms; in 1947 its strength was estimated at 80,000-100,000.

The promises made variously to Arabs and Jews during the First Great War and at other times, being interpreted differently by the two communities, led to severe clashes from the beginning. The Arabs, for example, interpreted a 1915-16 correspondence between Sir H. MacMahon, then high commissioner of Egypt, and Emir Hussein of Mecca, later king of Hedjaz, acting as spokesman of all Arab communities, as having granted them independent rights in all Arab countries, including Palestine. The Jews claimed sovereign rights on the strength of the Balfour Declaration which was embodied in the mandate entrusted to the U.K. Both claimed Palestine as their Promised Land; and as neither could get full satisfaction, they resorted to force.

Strikes, then Arab revolts, against the continued Jewish immigration took place in 1929, and

during 1936-38. They were suppressed by British forces, with considerable damage and bloodshed. Great efforts were made, however, to bring about a conciliation. White papers defining British policy were published 1922, 1936, 1939, and July, 1946; and a royal commission (the Peel commission) of 1937 recommended a partition of the country between Jews and Arabs. Resisted by both sides, this proposal was investigated afresh by the Woodhead mission of 1938, and was given up as impracticable. A London round-table conference, 1939, produced a scheme for the independence of Palestine within 10 years, all Jewish immigration after 1944 to be dependent upon Arab consent.

The Second Great War interrupted these attempts at overcoming the real Arab grievance: that a continued Jewish immigration, though beneficial materially and otherwise for Arabs, would abolish the Arab character of what for them is also a Holy Land.

#### The Second Great War.

At the outset of the Second Great War, Jews and Arabs in Palestine temporarily composed their differences, but because of its status as mandated territory, Palestine could not be formally at war. Some hundreds of Palestinians, mostly Jews, were recruited for service in the Auxiliary Military Pioneer Corps, and companies served with the B.E.F. in France in 1940. On June 10, 1940, however, the British govt. issued a decree empowering the high commissioner to place Palestine on a war footing and to mobilise the country's resources. Coastal defences were permanently manned, fifth column activities suppressed, and a black-out imposed in Jerusalem. Haifa became one of the two contraband control bases for the Mediterranean area and a refuelling base for Allied warships. On July 15 the Italians bombed Haifa; a few days later they attacked Tel Aviv.

In June, 1941, Palestine became the base for the British and Free French forces in their drive upon Syria. As a consequence, the country experienced a number of raids by German and Vichy bombers. While the Mediterranean remained virtually closed to British shipping, Palestine became a highly important base for British troops operating in N. Africa. Thousands of troops received pre-combat training there, and for the supply of these forces the country underwent consider-



able industrial development. In Aug., 1942, the British govt. compromised with a Jewish demand for a Palestine army by authorising the raising of the Palestine Regiment (*q.v.*). Later, Jewish and Arab commando units did valuable service against Axis-held islands in the Mediterranean. Some 50,000 Palestinians, Arab and Jew, served with the British forces in N. Africa, Abyssinia, and Greece. After the expulsion of the Axis forces from N. Africa, Palestine continued to be of military importance as a base and supply centre, and a training ground for troops destined for Italy. Rest and convalescent camps were also established there.

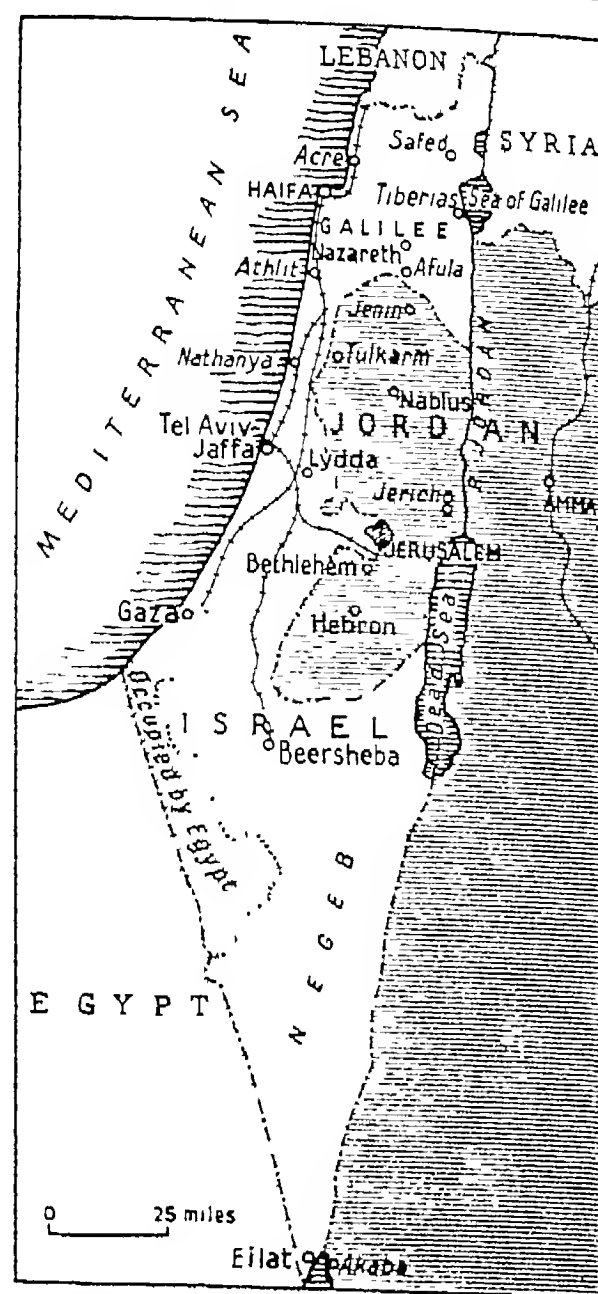
After the war, armed clashes, bomb outrages, and assassinations, often the work of Jewish terrorist organizations such as "Irgun Zvi Leumi" and the "Stern Gang," reduced the chances of peaceful settlement almost to nothing; and the Arab League, embracing Egypt, Iraq, Syria, Lebanon, Transjordan, Saudi-Arabia, and the Yemen, was set up in March, 1945. The report of an Anglo-American investigating committee, 1946, and the results of a special meeting of the United Nations, April-May, 1947, upon a

British application, led to a U.N. inquiry into Palestine. The U.N. report, Sept. 1, 1947, again recommended partition, with Jerusalem as an autonomous city. Both parties once more protested against this proposal and reacted with more acts of violence which cost numerous British lives.

#### End of the British Mandate

Thereupon the U.K. announced to the U.N. on Sept. 26, 1947, her decision to give up her mandate by May 15, 1948, and to withdraw all her forces by Aug. 1, leaving it to the U.N. to implement the partition plan (accepted Nov. 29, 1947). Even as the British began to leave, violent and bitter clashes broke out between Jewish and Arab forces, communication with the rest of the world was severely restricted, and world-wide concern was expressed for the material safety of the holy places of Jerusalem and elsewhere. On May 14, 1948, eight hours before the British mandate expired, the Jewish Agency proclaimed in a broadcast a Jewish state under the name of Israel. Within a few hours Arab forces from Lebanon, Transjordan, and Egypt invaded the country. The Egyptians captured Gaza and Beersheba, the Transjordan forces took Jericho and entered Jerusalem, and in the N. Samakh fell to the Syrians; while Israeli forces captured the Arab port of Acre. A U.N. resolution calling for a four-week truce was accepted by Arabs and Jews, and hostilities ceased on June 11, by which date all territory assigned to Israel under the U.N. partition plan (*see map*) was in Jewish hands, except for parts of the Negeb. But peace proposals put forward by the U.N. mediator, Count Folke Bernadotte, were rejected by both Israel and the Arab league, and fighting was resumed on July 8, only to cease again under a U.N. threat to apply sanctions. By this time Israel had greatly strengthened its military position, having recaptured various towns, including Nazareth and Lydda, and secured all W. Galilee. From then onwards there were many minor infractions of the cease-fire, especially in Jerusalem, and later in the Negeb, the Israelis taking Beersheba, Oct. 21. On the Lebanese frontier an Arab "liberation army" of 5,000 was routed by the Israelis.

In the Dec. Palestinian Arabs proposed that Arab Palestine should be united with Transjordan. Other members of the Arab league opposed this suggestion; but the



Palestine. Map showing the division of the country between Israel and Jordan, 1950

union was formally endorsed April 11, 1950, by a new parliament elected both from Transjordan—officially restyled the Hashemite kingdom of the Jordan—and from the part of Arab Palestine under Jordanian control. The unity of Arab opposition being now disrupted, armistices were concluded between Israel and all the Arab countries.

Meanwhile nearly a million Arabs had fled from Israel-occupied Palestine, and much of the room they had left had been taken up by new Jewish immigrants. The U.N. inaugurated a special relief fund to assist the Arab refugees.

A U.N. "conciliation commission," consisting of representatives of the U.S.A., France, and Turkey, set up in 1948, called the opposing parties into conferences at Lausanne, April-June, 1949, and July-Sept., 1949, with little result, mainly because of the refugee problem. The conciliation commission also submitted to the U.N. Palestine committee proposals for the internationalisation of Jerusalem. Both Israel and Jordan, each holding a part of the city, rejected them, and the city remained divided.

EFFECTS OF JEWISH IMMIGRATION. Jewish immigration into Palestine enormously raised the country's production, agricultural



Palestine. Map illustrating the United Nations proposals of Nov., 1947, for the partition of the country into Jewish and Arab states

as well as industrial, its land values, and its educational, hygienic, and general living standards, for Arab workers as well as for Jewish and Christian ones. Before 1948 wages were from twice to three times those in neighbouring Arab countries, while the cost of living exceeded theirs by from 8–15 p.c. only. During 1921–47 the number of industrial enterprises rose from 1,749 (with 4,434 employees) to about 7,000 (with 60,000), with new capital investment of about £30 million. Palestine's exports in 1946 were valued at £24,485,000.

A special fund, established 1901, purchased land which it leased to Jewish settlers. Another fund, established 1920, financed the development of Jewish villages and collective farm communities and granted subsidies and redeemable long-term loans. A syndicate of British foundation was set up to exploit the mineral wealth of the Dead Sea, and an electric corporation, founded in 1921, supplied electric current, mainly with Jordan and Yarmuk water power. A large petroleum refinery was built at Haifa and linked by pipe-line with the Iraq oilfields. Textile mills, engineering and instrument-making plants, and cement and brick factories were established as were factories related to agriculture: for canning, vegetable oil extraction, baking, manufacture of agricultural machinery, etc. Agriculture itself, with the help of irrigation, fertilisation, and soil redemption, was greatly improved. Railways and roads were constructed; Haifa, Jaffa, and Tel Aviv were developed as ports; and an international airport was created at Lydda, 10 m. S.E. of Jaffa.

**Palestine.** A city of Texas, U.S.A., the co. seat of Anderson co., 160 m. N. of Houston. Situated between the Trinity and Neches rivers, it ships cotton, maize, fruit, and vegetables from the surrounding country. Its industries include the manufacture of cotton, cottonseed oil, furniture, and bottles. Settled 1837, it became a city in 1875. Pop. (1950) 12,503. The Palestine salt dome is a geological wonder, 30,000 ft. in diameter.

**Palestine Police.** British police force established in 1923 when the League of Nations gave the U.K. the mandate over Palestine, disbanded May 15, 1948, when the U.K. relinquished the Palestine mandate. The force was recruited from Britons, Arabs, and Jews; the British element, recruited in the U.K. numbered

some 4,000 out of a total of 16,000. Although armed and equipped to army scale, the force was a strictly civilian organization. The Arab disorders of 1936–39 and the Jewish terrorist campaign after the Second Great War caused severe casualties to the force, particularly amongst its British element; but discipline was high amongst all three nationalities, and Jew and Arab personnel invariably remained loyal in periods of acute inter-racial strife.

**Palestine Regiment.** Former regt. of the British army. Authorized in Aug., 1942, it was raised and expanded from Jewish and Arab companies of the Royal West Kent regt., which in 1941 had opened its ranks to Palestinians. The Palestine regt. eventually had a strength of 10,000, divided into one Arab and three Jewish battalions. Originally raised for service in and near Palestine, it later fought in N. Africa and in Italy, where it earned particular distinction at the crossing of the Senio river, April 9, 1945. The regt. was disbanded at the end of the Second Great War.

**Palestrina.** City of Italy, in the prov. of Rome, 23 m. E.S.E. of the capital. With steep streets, it is picturesquely situated on a hillside, and is built over the ruins of a vast temple of Fortuna which graced the Roman city of Praeneste (*q.v.*). Pop. (1951) 9,503.

Palestrina came in the Middle Ages into the possession of the Colonna family, but in 1298 during a war with the pope it was destroyed, as, rebuilt, it was again by the pope's troops in 1448. The Colonnas again restored it, and from them it passed to the Barberini family. There are remains of the castle of the Colonnas, and of the citadel. The palace of the Barberini still stands.

**Palestrina,** GIOVANNI PIERLUIGI DA (1524–94). Italian composer. Born at Palestrina, from



G. P. da Palestrina,  
Italian composer

which he took his name, he studied in Rome about 1540, and, returning to his native town, was canon and organist there during 1544–51 when he was made master of music at the Vatican. On the accession of Paul IV, in 1555, he lost his post, but soon filled a similar one at S. John Lateran. He moved in 1558 to S. Maria Maggiore, and in 1571 re-

turned to the Vatican, to remain there until his death, Feb. 2, 1594.

Palestrina was the greatest master of polyphonic music who ever lived. His famous 15 books of masses represent the perfect type for vocal music in the modal style, and are landmarks in the history of religious music, especially perhaps the mass he composed for Pope Marcellus II. The simplicity and dignity of his music have greatly influenced composers of the 20th century. Palestrina composed over 250 motets, some madrigals, and made 29 settings of the Song of Songs.

**Palestro.** Village of N. Italy in Pavia prov., 34 m. W.S.W. of Milan. Pop. (1951) 2,757. It was the scene of heavy fighting between the Austrians and allied French and Sardinians, May 30–31, 1859. The brunt of the battle fell on the Sardinian troops, a division of whom were led into action by Victor Emmanuel, whose bravery was so conspicuous that a French regiment elected him their corporal. The Austrians were routed with a loss of 1,500, and began the retreat which led to Magenta and Solferino.

**Paley,** WILLIAM (1743–1805). British theologian. Born at Peterborough, the son of a schoolmaster. he was educated at Giggleswick and Christ's College, Cambridge, becoming tutor and lecturer in the University. In 1776 he took a living in Westmorland;



William Paley,  
British theologian

in 1782 he was made archdeacon of Carlisle, and later rector of Bishop Wearmouth. He died at Lincoln, where he was sub-dean, May 25, 1805, and was buried in Carlisle cathedral. Paley's writings include *Principles of Moral and Political Philosophy*, 1785; *Evidences of Christianity*, 1794; *Natural Theology*, 1802.

**Palghat.** Town of Kerala, India, capital of a dist. of the same name, area 1,974 sq. m. The town is situated at the W. end of the Palghat Gap on the main Madras-Calicut rly. Pop. (1951) town, 69,504; dist., 1,564,067.

**Palghat Gap.** Outstanding physical feature of S. India. It is a depression cutting across the Deccan S. of the Nilgiri hills, the one break in the steep escarpment of the Western Ghats and the only easy route of communication



between the Malabar and Coromandel coasts. It is 20 m. wide and just over 1,000 ft. high, and carries the main rly. line from Madras to Calicut.

**Palgrave, SIR FRANCIS** (1788–1861). British historian. Son of Meyer Cohen, a Jew, he was a



Sir Francis Palgrave,  
British historian  
After G. Richmond, R.A.

Londoner. He married Elizabeth Turner, adopted her mother's name of Palgrave, and embraced Christianity in 1823. Called to the bar at Middle Temple in 1827, he was knighted in 1832, was deputy keeper of the public records, 1836–61, and did much to promote the study of medieval history. He died at Hampstead, July 6, 1861. He wrote *The Rise and Progress of the English Commonwealth*, 1832; *Truths and Fictions of the Middle Ages*, 1837; *History of Normandy and England*, 4 vols., 1851–64.

Of Palgrave's four talented sons, the eldest, F. T., is noticed below. William Gifford (1826–88) was a missionary who in 1862–63 crossed Central Arabia disguised as a Syrian, and a diplomatist who ended as British minister to Uruguay, where he died. Sir Robert Marny Inglis (1827–1919) edited *The Economist*, 1877–83, and *Dictionary of Political Economy*, 1894–1914. Sir Reginald (1829–1904) was clerk to the house of commons 1886–1900.

**Palgrave, FRANCIS TURNER** (1824–97). British poet and critic. Born in London, Sept. 28, 1824, eldest son of the above Sir Francis Palgrave, he was educated at the Charterhouse and Balliol College, Oxford. He joined the education department in 1849, and after his retirement was in 1886 appointed professor of poetry at Oxford. He died Oct. 25, 1897. His fame rests chiefly on the work he did as editor of poetical anthologies, above all *The Golden Treasury of English Lyrics*, 1861–97 (many edns.). *Landscape in Poetry*, 1897, is a critical work.



F. T. Palgrave,  
British poet  
Elliott & Fry

**Pali** (canon). One of the oldest popular dialects of India. It is the language of the sacred books

of the Buddhists, who themselves call it Magadhi, the language of Magadha, where Buddha preached in it. The Pali characters are akin to those of Sanskrit, from which it is derived. Its extensive literature includes Tipitaka (the three baskets), the Buddhist scriptures; the commentaries on them; the Questions of Menander, a religious discussion with a Bactrian king; and two valuable chronicles of Ceylon.

**Palimpsest** (Gr. *palimpsestos*, rubbed again). Ancient manuscript whose writing has been imperfectly effaced and its material re-used. Vellum was washed and rubbed, papyrus was sponged. The Codex Ephraemi in Paris, a 5th century Greek Biblical text, was overwritten in the 12th century with the works of Ephraem Syrus. Examples of double palimpsests are known. The term is loosely used for monumental brasses and stone slabs, re-used on the back without erasure of the front. It is applied also to re-worked flint implements, regarded as archaeological documents. See Manuscript; Palaeography.

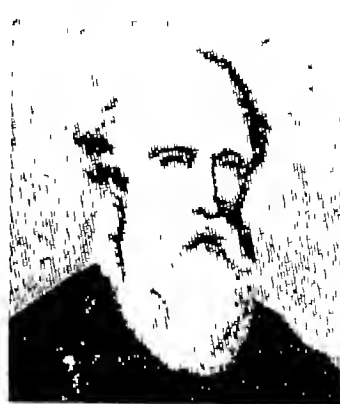
**Palindrome** (Gr. *palindromos*, running backwards). Word or sentence which reads the same forwards or backwards. An example is the saying put in the mouth of Napoleon, "Able was I ere I saw Elba."

**Palingenesis** (Gr. *palin*, again; *genesis*, birth). Metaphorically, the regeneration of anything old, such as institutions or mankind as a whole. Philosophically, the theory that all living beings, animals as well as men, will be born again to a more perfect state. Biologically, the reproduction of ancestral characteristics without any change, as opposed to cenogenesis.

**Palinode** (Gr. *palin*, contrariwise; *ōdē*, song). Ode in which the poet retracts the substance of an earlier poem, a recantation. Stesichorus (fl. c. 610 B.C.) wrote a palinode recanting an attack on Helen, and Horace, Od. i, 16, retracts the hasty iambic diatribes he launched against Canidia in his 5th and 17th Epodes charging her with sorcery. See Ode; Poetry.

**Palinurus**. In classical legend, the steersman of the ship of Aeneas. The promontory of Palinurus, now Cape Spartivento, on the coast of Lucania, in Italy, is said in the Aeneid to have been named from this hero, who there fell into the sea. The name Palinurus was used as a pseudonym by Cyril Connolly (q.v.) in his book *The Unquiet Grave*, 1945.

**Palissy, BERNARD** (c. 1510–89). French potter. Born in S.W. France, he embarked on his



Bernard Palissy,  
French potter

father's trade of glass-painting. At Saintonge he began experiments which, after 16 years of effort, resulted, in 1557, in his perfecting the process of coloured enamel ware which bears his name. He was imprisoned as a Huguenot in 1562, but was released through the influence of the Duc de Montmorency, and in 1564–65 set up his workshop in the Tuileries. Towards the end of his life he was again arrested as a heretic, and imprisoned in the Bastille, where he died. See Pottery. Consult Palissy the Potter, H. Morley, 1852.

**Palitana**. State of the union of Saurashtra, India; also the chief town of the state. The state lies in the S.E. of the peninsula of Kathiawar, in the Gohilwad division. Grain, sugar-cane, and cotton are grown. The town, 120 miles S.W. of Ahmadabad, is an inland terminus of a branch rly. line, with connexions to Mehsana and Bhavnagar. The holy mountain of Satrunjaya dominates the town. The area of the state is 300 sq. m. Pop., state, 76,432; town, 16,700.

**Palk Strait**. Shallow channel separating N. Ceylon from the Deccan, India. It lies N. of Adam's Bridge, which separates it from the Gulf of Manaar. It is 45 m. wide at the Bay of Bengal entrance and opens out to the S.W., leading to Palk Bay.

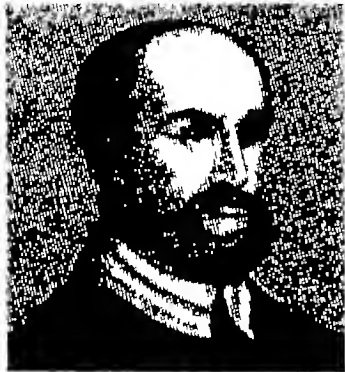
**Pall**. Heavy cloth, black, purple, or white in colour, used to cover a coffin or hearse. Pall bearers are men who walk by the sides of the coffin, holding the corners of the pall. At the funerals of royal personages and great men, men of eminence usually act as pall bearers. At naval, military, and R.A.F. funerals a Union flag serves as a pall.

**Pall**. In heraldry, a charge in the form of the capital letter Y. It is supposed to represent the *pallium*, and sometimes depicted as such, the lower end terminating in a fringe. More commonly all three ends touch the edge of the shield, unless it is described as couped, with the ends cut off. It should occupy about a third of the field, and is by some authorities classed as a sub-ordinary (q.v.). If the ends are cut off to form points the charge is called a shakefork.

**Palladian.** A style of classical architecture associated with Andrea Palladio. Simple, correct, and rather cold in form, it was invented to meet the special demands of Venetian patrons, who desired villas and palaces which, while serving all utilitarian purposes, should at the same time present a well-balanced and dignified exterior in the neo-classic manner.

In real Palladian buildings, such as the Palazzo Thiene at Vicenza, a favourite device is the use of two orders of columns or pilasters, the minor order being used to support the arches which occurred between the major. Palladio preferred the Ionic order, and his Corinthian capitals were not well done. He avoided the broken pediment and the pedestal; composed his cornices with an eye to the order employed; and was scrupulously exact in the mathematical arrangement of his doors and windows. *See Architecture*; Jones, Inigo.

**Palladio, ANDREA** (1518-80). Italian architect. Born at Vicenza, Nov. 30, 1518, he studied at Rome. He is the chief exponent of the new Roman as opposed to the Renaissance architecture. His work was divided mainly between Vicenza and Venice; at the latter city he built the Foscari palace, the Redentore church, and the Carità, and an endless series of villas. His influence on foreign styles was enormous. He died at Vicenza, Aug. 19, 1580.



Andrea Palladio,  
Italian architect

**Palladium.** In Greek legend, a statue of Pallas Athena, which fell from heaven, and was kept in the city of Troy, which could not be taken so long as this statue was there. Shortly before the fall of Troy it was abstracted by Odysseus and Diomedes, who entered the city in disguise. According to another legend, the Palladium was taken to Italy by Aeneas after the fall of Troy, and several cities professed to own it. It was probably a meteoric stone.

**Palladium.** A metallic element of the platinum family. W. H. Wollaston discovered it in 1804 and named it after the planet Pallas. Its chemical symbol is Pd, and it is one of the transitional elements of the second long period of the periodic table, with ruthenium and rhodium. Its atomic number is 46; atomic weight, 106.70; specific gravity, 12.0;

electrical conductivity, 15; melting point, 1,554° C. Crystal form, face-centred cubic, with lattice constant  $a = 3.882$  and an interatomic distance of 2.745 Å.U.

Palladium occurs in nature associated with platinum and the other platinum metals mainly in the metallic form and as arsenide and selenide. The richest source is in the Urals, but deposits have been discovered and often worked to exhaustion elsewhere. In South Africa the metals are found native and in oxide or sulphide ores. Since 1920 the low-grade copper nickel ores at Sudbury, Ontario, have become the chief source of the platinum metals. They are concentrated with the two base metals throughout the smelting operations and then separated electrolytically and by fractional crystallisation of salts. The hot metal readily absorbs gases and precautions have to be taken to reduce this absorption. It will absorb large volumes of hydrogen, one vol. of palladium being capable of absorbing 800 vols. of hydrogen at room temperature.

Palladium is about half as heavy as platinum, but otherwise closely resembles it, though considerably cheaper. It is harder and stronger than platinum, having an ultimate tensile strength of 12 tons per sq. in. in the annealed state, compared with platinum's 10; and a Vickers hardness of 40, increasing to 105, when it is cold worked. It is not corroded by air at ordinary temperatures, but it will oxidise at 400° C., the oxide dissociating again at about 900° C. The metal is easily rolled into sheet, drawn into wire, or fabricated in other ways. Palladium leaf, similar to gold leaf, can be made in sheets less than 1/250,000 inch thick and is used for decoration. The chief use of palladium is in the electrical industry, where it is used for contacts, especially for telephone relays and street traffic control. Its use, both alone and as alloys with rhodium and ruthenium, for the manufacture of jewelry has much increased. Palladium salts have been used in photographic toning baths and it is employed as a hydrogenation catalyst in certain chemical processes. *See Platinum.*

**Palladium.** Place of entertainment, in Argyll Street, London, W.1. It was opened as a music hall, Dec. 26, 1910, and became a favourite centre of variety shows before and during the First Great War. Reopened as a theatre Dec. 26, 1921, it staged revues and

spectacular variety performances, and became the home of the Crazy Gang: Flanagan and Allen, Naughton and Gold, Nervo and Knox. It was the scene of several royal command variety performances attended by George V and George VI. The theatre seats 2,388.

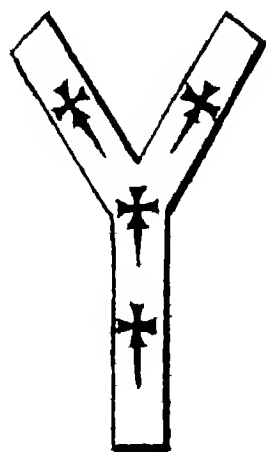
**Pallas.** One of the minor planets or asteroids. It is remarkable for the great inclination of its orbit to the ecliptic (34°). The second to be discovered, it was found on March 28, 1802, by Olbers (1758-1840). *See Asteroids.*

**Pallas.** In Greek mythology, epithet of, and later name for, the goddess Athena. It perhaps means virgin. One of the Titans was also called Pallas. *See Athena.*

**Pallas.** Freedman of the Roman emperor Claudius. Together with another freedman named Narcissus, and Agrippina, wife of Claudius, he administered the empire. On the accession of Nero he was dismissed from office, and, after living some years in retirement, fell a victim to Nero's desire to possess his immense fortune.

**Palliser, SIR HUGH** (1723-96). British admiral. The son of a soldier, he was born in Yorkshire, Feb. 26, 1723, and entered the navy in 1735. In 1746 he obtained command of a ship, and in 1759 took part in the operations against Quebec. In 1764 he was made governor and commander-in-chief at Newfoundland; in 1770 controller of the navy; and in 1773 a baronet. When serving under Keppel in 1778, he engaged the French fleet but the action was not pressed to a conclusion. Palliser, whose house was burned by a mob, resigned his office and was tried by a court-martial, which gave an ambiguous verdict. However, he was made governor of Greenwich Hospital and an admiral, and he died March 19, 1796.

**Pallium** OR PALL (Lat., cloak). Ecclesiastical vestment. Bestowed by the pope upon archbishops and certain bishops of the Latin Church, and equivalent to the *omophorion* of the Greek Church, it is made of white woollen cloth, Y-shaped, worn over the shoulders, falling back and front, and is embroidered with black or purple crosses. It signifies that the wearer possesses fullness of episcopal office, and



Pallium worn  
by archbishops of  
the Latin Church

Burns, Oates  
& Washbourne



is buried with him. Of obscure origin, it is supposed to have affinity with the breastplate of the Jewish high priest. In early times the word was applied by the Romans to the Greek cloak (*himation*), particularly affected by Diogenes and his followers. Later it became, in an enriched form, the robe of the emperor.

**Pall Mall.** London thoroughfare. It runs W. from the junction of Cockspur Street and Pall Mall East, where is an equestrian statue of George III by Wyatt (1836), to St. James's Palace. Originally formed about 1690, and at first called Catherine Street, it is, like The Mall (*q.v.*) named after the French game of *paille-maille*, or *pail-maill*, played here in the 17th century. On its S. side, going W., are the United Service, Athenaeum, Travellers', Reform, Royal Automobile, Oxford and Cambridge, and Marlborough-Windham clubs; on the N. side the Junior Carlton and Army and Navy clubs. Several of these had their premises damaged by German bombs in the Second Great War. The Carlton Club suffered seriously and had to move.

The R.A.C. is on the site of the old war office, which was formed from part of Schomberg House, 1650, once the residence of Cosway and Gainsborough. At the S.W. extremity of the street is the entrance to Marlborough House. On the site of No. 79 was a house in which Nell Gwynn lived the last 16 years of her life. At No. 51, Dodsley, the publisher, had a shop. At the old Star and Garter inn, Jan. 24, 1765, the 5th Lord Byron fatally wounded Chaworth in a duel. The Royal Society of Painters in Water Colours has its gallery in Pall Mall East, which runs W. from the National Gallery. Pall Mall was the first London street to be lighted with gas, 1807.

**Pall Mail.** Obsolete game, called *paille-maille* in France, whence it was introduced into England in the reign of Charles I. It was a kind of combination of croquet and golf, boxwood balls being driven by mallets through iron hoops set in an alley about 800 yards in length and floored with powdered cockle-shells. The game, which enjoyed great popularity after the Restoration, is mentioned by Pepys. It was first played in the long alley near St. James's Palace now called Pall Mall, and there was another alley in St. James's Park. A mallet and some balls used in the game

were found in a house in Pall Mall demolished in 1845, and are now in the British Museum.

**Pall Mall Gazette.** THE. Former London evening newspaper, established by George M. Smith, Feb. 7, 1865. Frederick Greenwood was the first editor. His successors included John (Viscount) Morley, W. T. Stead, who created a sensation by his articles on the white slave traffic, entitled *The Maiden Tribute of Modern Babylon*, which led to his imprisonment in Holloway; and E. T. (afterwards Sir Edward) Cook. After absorbing *The Globe* in 1921 the P.M.G. was itself incorporated in the *Evening Standard*, 1923. The title of the paper was taken from that "written by gentlemen for gentlemen" in Thackeray's *Pendennis*.

**Palm.** Old, natural measure of length, taken from either the breadth or the length of a man's hand. In Britain a palm was reckoned either as three or four inches, in Roman measure it equalled about 3 ins. The word is used in Holland as the equivalent of one decimetre. See *Hand*.

**Palm** (*Palmae*). Family of trees, natives of tropical and sub-tropical

sheath, which remains after the leaf is dead, and gives the characteristic ruggedness to the stem.

The flowers are produced in a great branching cluster, usually from the axils of the leaves. In some species male and female flowers are produced by the same tree, in others the sexes are in separate trees. The fruits are either berries, plum-like (drupes), or, as in the coconut, invested with a hard woody shell covered with a very thick fibrous husk. Coconuts and dates are of great importance as food, and large quantities of sugary fluid or starch are furnished by the stems of some species. The leaves are utilised for thatching, basket-making, mats, and hats, and the fibres of the leaf-sheaths are of economic importance.

A number of species are in cultivation in greenhouses as ornamental foliage plants, mostly in a juvenile condition. See *Assai*; *Australian Feather-Palm*; *Bactris*; *Coconut Palm*; *Date*; *Deleb Palm*; *Doom Palm*; *Fan-Palm*; *Oil Palm*; *Raphia*; *Rattan*; *Toddy Palm*; *Wax Palm*, etc.

**Palma** DE MALLORCA. Capital of the Balearic Isles, a prov. of Spain. It is a seaport on the S.W.



Palma, Maiorca. A general view of the town crowned by its Gothic cathedral

regions. There are about 1,500 known species distributed in 200 genera, many of them familiar from their economic importance—such as coconut (*Cocos nucifera*), oil-palm (*Elaeis guineensis*), date (*Phoenix dactylifera*), betel (*Arca catechu*), wine-palm (*Raphia vinifera*), etc., all of which are described under their names. There is only one European species (*Chamaerops humilis*), which is found in the Mediterranean region. In a few cases, such as nipa and vegetable ivory (*Phytelphas*), the stem is dwarfed and the leaves radical, but as a rule, it is tall (up to 150 ft.), unbranched, and terminates above in a crown of very large fan-shaped or feather-shaped leaves. These are attached to the stem by a firm

coast of Majorca, 135 m. from Barcelona. Built in an amphitheatre overlooking the bay of the same name, with orange groves outside the walls, the houses are in the Moorish style. The Gothic cathedral dates from 1232–1601; the exchange and the governor's palace are interesting buildings. Manufactures include silks, woollens, liqueurs, chocolate. It is the port for the island and trades specially in fruit and vegetables. During the Spanish Civil War, 1936–39, there was a naval base here, used by Gen. Franco. Pop. (1950) 136,814.

**Palma** OR SAN MIGUEL DE PALMA. Most westerly of the Canary Islands, belonging to Spain, 67 m. W.N.W. from Tenerife. It is 26 m. long by 16 m. wide;

area 280 sq. m. The mountainous interior culminates in the Pico de la Cruz, 7,730 ft.; severe volcanic eruptions took place here in 1949, several villages being destroyed. Wines, fruits, honey, and silk are produced in the fertile wooded valleys. The capital is Santa Cruz de la Palma, on the E. coast. Pop. (1950) 34,740.

**Palma di Montechiaro.** Town of Italy, in Agrigento prov., Sicily. It is noted for the quality of its almonds, and is reached by steamboat from Licata or Porto Empedocle. Pop. (1951) 18,433.

**Palma Vecchio** (c. 1480–1528). Name by which Giacomo Negretti or Palma, Italian painter, is generally known.



Palma Vecchio,  
Italian painter  
Self-portrait in Pinakothek, Munich

Born near Bergamo, he probably studied under Cima at Venice, where he continued to work, and where he died, July 28, 1528. Strongly influenced by Titian and

Giorgione, his classic composition and characteristic colouring make his work easily recognizable, especially his Holy Conversation pictures. Examples of his work are on view in many continental galleries. He is called Vecchio (old) to distinguish him from his grand-nephew Jacopo Palma (1544–1628). See Barbara, S.

**Palm Beach.** Winter resort of Florida, U.S.A., in Palm Beach co. It stands on a narrow island, 30 m. long, separating Lake Worth from the Atlantic, 300 m. by rly. S.S.E. of Jacksonville, and 65 m. N. of Miami. With West Palm Beach, the co. seat, which extends 12 m. along the opposite shore of the lake, it is one of the world's most luxurious winter resorts; some 200,000 visitors come every season. The two towns on the easternmost portion of the coast are served by Seaboard air line and Florida East Coast rly. The Gulf Stream contributes to the equable climate. Development began in 1892. Both towns were damaged in the hurricane of 1928. Pop (1950) 3,886.

**Palmer.** Name given to any Christian who had made a pilgrimage to the Holy Land. He brought back a consecrated palm staff or branch as evidence of his journey. The surname Palmer is probably a survival. See Pilgrim.

**Palmer, Sir Charles Mark** (1822–1907). British shipbuilder. Born at South Shields, Nov. 3,

1822, he joined a shipping firm in Newcastle. Later, in 1850, he built the first iron screw collier to develop the coal trade with London, and then added others. In the meantime he had become interested in coal and iron, and erected huge works at Jarrow. He was M.P. for North Durham, 1874–85, and for Durham (Jarrow) until his death, June 3, 1907. He was created a baronet in 1886.

**Palmer, Samuel** (1805–81). British painter. Son of a bookseller, he was born in London, Jan. 27, 1805, and studied under John Linnell whose son-in-law he afterwards became. Influenced by Blake's visionary world, he painted many water-colour landscapes with a strange mystical beauty. These belonged to the most vital and important period of his youth; his work became heavier and more stilted after his 30th year. Palmer remained unappreciated during his lifetime. He translated Virgil's Eclogues, illustrated by his own etchings, and made drawings for the works of Milton. He died at Reigate, May 24, 1881. He is represented at the Tate Gallery. Consult *The Visionary Years*, G. Grigson, 1947.



Samuel Palmer,  
British painter  
After J. Linnell

**Palmer, William** (1825–56). British poisoner. He was hanged at Stafford gaol, June 14, 1856, for poisoning a racing associate, John Parsons Cook, with antimony and strychnine. Palmer was a country surgeon at Rugeley, when he became involved with moneylenders as a result of betting. By 1855 he was driven to raise money by forged acceptances, and it was the fear of disclosure and prosecution which drove him to his final crime. His victim Cook won the Shrewsbury Handicap with his horse Polestar, and a large sum of money in bets, which Palmer determined to obtain. Cook put up at the Talbot Arms, opposite Palmer's house at Rugeley. Cook was taken ill, and from the morning of Nov. 17, 1855, to the evening of the victim's death on the 20th, Palmer literally administered everything that passed the sick man's lips. Palmer is supposed to have poisoned at least six other persons, including his brother and mother-in-law, whose lives he had insured. A novel, *Slow Poison*, J. Rowland, 1939, was based on

Palmer's trial. Consult *Trial of W. Palmer*, ed. G. Knott, 1912.

**Palmerston.** Former name of the port of Australia, in Northern Territory, now called Darwin (*q.v.*).

**Palmerston, Henry John Temple, 3rd Viscount** (1784–1865). British politician and diplomat. He was born in London on Oct. 20, 1784, and belonged to an Irish branch of the family of Temple. Sir John Temple, speaker of the Irish house of commons, had



Lord Palmerston,  
British politician

a son Henry, who, in 1723, was made an Irish viscount. His grandson was the statesman's father. Educated at Harrow, Henry succeeded in 1802 to the title, went to St. John's College, Cambridge, and in 1807 entered the house of commons as M.P. for Newtown, Isle of Wight. At once he was appointed a lord of the admiralty, and in 1809 he became secretary at war, an office he retained until 1828, being in the cabinet from 1822.

A Tory, he served under Perceval, Liverpool, and their successors, but after Canning's death, like other of that statesman's followers, he gravitated towards the Whigs and made a study of foreign affairs. In 1830 he was made foreign secretary under Grey, and he was at the foreign office with the Whigs until 1841, except for a period in 1834–35. He came back to the same office under Russell in 1846, but in 1851, having offended the queen and his colleagues by approving of Louis Napoleon's *coup d'état* without consulting them, he was dismissed. He was home secretary 1853–55, and then disgust at the management of the Crimean War brought him the post of prime minister. He left office in 1858, but from 1859 was prime minister until his death, Oct. 18, 1865. During 1811–31 he had represented the university of Cambridge, and during 1831–65 the borough of Tiverton. Except for a few months he had sat in parliament for 58 years.

Palmerston was notable for his vigorous, aggressive assertion of Britain's rights. For 30 years the spokesman of his country to foreign powers, he was chiefly responsible for the separation of Belgium from the Netherlands in 1839; was active in checking the influence of Russia at Constantinople; sympathised with the



movement for Italian unity; and was continually suspicious of France. Never afraid of responsibility, he often ignored his colleagues and as often offended foreign statesmen. His attitude was a blend of bluff and belligerency, but his obvious devotion to British interests and his plainness of speech made "Pam" popular with the people.

Very autocratic, especially in later years, his conservative attitude of mind was responsible for the postponement by the Liberal party of democratic measures which were put forward after his death. He left no children, and his estates, including Broadlands, his seat at Romsey, passed to Lord Mount Temple, and then to the Hon. E. Ashley, both being related to Lady Palmerston, who was the widow of the 5th Earl Cowper. Palmerston was a nobleman of the old school, a sportsman, fond of society, the card table, and the racecourse, but possessing also the graces that marked the last of his kind. A statue of Palmerston stands in Palmerston Park, Southampton.

**Bibliography.** Lives, Lord Dalling and E. Ashley, 1879; L. Sanders, 1888; B. K. Martin, 1924; P. Guedalla, 1926; E. F. M. Smith, 1935; H. C. F. Bell, 1936; Correspondence with Gladstone, ed. P. Guedalla, 1928; The Foreign Policy of Palmerston, 1830-1841, Sir Charles Webster, 1951.

**Palmerston North.** City of the North Island, New Zealand, 88 m. N.N.E. of Wellington. It is a rly. junction; the chief industries of the neighbourhood are saw-milling and dairy farming. Pop. (1951) 30,518.

**Palmetto** (*Sabal palmetto*). Tree of the family Palmae. It is a native of southern N. America, and has a stem from 20 to 40 ft. in height, with a spreading crown of long-stalked, heart-shaped leaves, 6 to 8 ft. long, with numerous divisions from the margins. The leaves are split up and plaited into "chip" hats.

**Palmgren, SELIM** (1878-1952). Finnish composer. Born at Björneborg (Pori), Feb. 16, 1878, he studied at Helsingfors (Helsinki) conservatoire, and with Busoni in Italy. A brilliant pianist, he produced many short lyrical pieces for the piano. He also wrote piano concertos — *Metamorphoses* and

The River—and infused into his compositions a national flavour reminiscent of Grieg. Other works included two operas. He married the singer Maikki Järnefelt, with whom he toured extensively, and in 1923 settled at Rochester, N.Y., becoming teacher of composition at the Eastman school of music. He died Aug. 14, 1952.

**Palmi.** Town of Italy, in Reggio di Calabria province. It is situated on the slope of Monte Elia amid orange groves and olive orchards, has a port on the Gulf of Gioia, and is 26 m. by rly. N.N.E. of Reggio. It is in the earthquake zone and suffered severely in 1783 and in 1908. Pop. (1951) 19,194.

**Palmiet Rush** (*Prionium palm-ita*). Perennial plant of the family Juncaceae. It is a native of S.

Africa, growing in swamps and rivers, frequently choking the latter. Unlike other rushes, it forms a trunk-like stem 5-10 ft. long, which is partly submerged. From the top of this springs a cluster of sword-shaped leaves, which are an inch broad at the base. The greenish-yellow, rush-like flowers rise from the centre of the leaf-tuft in a cluster several feet long. The leaves

are used for thatching, and contain strong fibres, those from the lower part being used for making brushes, and as a substitute for horsehair stuffing.

**Palmira.** Town of Colombia. It lies W. of the Central Cordillera, in the dept. of Valle del Cauca, about 160 m. S.W. of Bogotá. It is the centre of a fertile dist., producing tobacco, coffee, cacao, sugar, rice, and maize. Pop. (est.) 60,000.

**Palmistry.** Art or practice of hand reading, also called cheiromancy. This is of great antiquity and in the Middle Ages was considered one of the black arts. Palmistry is divided into two heads: cheirognomy, which deals with character reading from shape and texture of hand, fingers, and nails; and cheirogonomy, which deals with marks and lines on the palm, by which are read past, present, and future events. The fingers are named Jupiter, Saturn, Apollo, and Mercury, and the fleshy pads at the base of the fingers are called mounts.

The principal lines on the palm are named life line, head line,



Diagram of left hand, illustrating principal lines and significant parts. Fingers—A, Jupiter; B, Saturn; C, Apollo; and D, Mercury—have each 3 phalanges, numbered 1, 2, and 3. On the hand: 1, 2, 3, and 4 are mounts of Jupiter, Saturn, Apollo, and Mercury respectively; 5, mount of Luna; 6, mount of Venus; 7, mount of Mars. Principal lines are: E E, Life; F F, Head; G G, Heart; H H, Fate; X X, Apollo

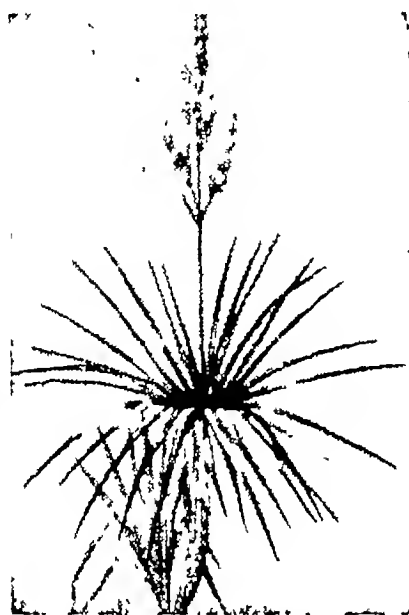
heart line, fate line, and line of Apollo. From the life line is judged length of life, etc. From the head line are judged intellectual qualities and characteristics concerning business or profession. The heart line deals with the affections, the fate line with events of the future. By the line of Apollo is traced the gain or loss of riches, etc.

Mounts interpret character and denote courage, imagination, pride, benevolence, love of art, etc. A hand with few lines clearly marked and of good colour is considered a fortunate hand; a hand with numerous lines and marks is considered unfortunate.

A person who professes to tell fortunes or uses any subtle craft, means, or device by palmistry to deceive anybody may be convicted of being a rogue and vagabond.

**Palmitic Acid.** One of the fatty acids, to which the chemical formula  $C_{15}H_{31}CO_2H$  is assigned. It was called palmitic acid by its discoverer Heintz in 1852, because it is obtained in large quantities from palm oil, in which it occurs as palmitin. Palmitic acid occurs in other vegetable and animal fats, but palm oil is the best source. It is prepared by boiling palm oil with caustic potash, decomposing the soap thus formed by sulphuric acid, and purifying the palmitic acid by recrystallisation from alcohol.

**Palm-nut Cake.** Artificial feeding stuff. A product of tropical W. Africa, it is made from the kernels of the palm nut (*Elaeis guineensis*) after the oil has been



Palmiet Rush. Leaf cluster and flower

extracted. It is also on sale in the form of meal.

**Palm Oil** OR PALM BUTTER. Oil extracted from the fleshy part of the fruit of several species of palm. The fruits are allowed to ferment and then pressed, a lower quality being obtained by boiling the residue with water and skimming off the oil. When fresh palm oil has a pleasant violet-like odour. It is composed of tripalmitin and olein and melts at 27° C., is soluble in ether and turpentine, and is used to make candles and soap.

**Palm Sunday.** Sixth Sunday in Lent, a week before Easter. On this day the Christian churches celebrate Christ's entry into Jerusalem, when the multitude strewed palm leaves and branches, emblems of victory and rejoicing, on the way (John 12). In the R.C. Church it is celebrated by the blessing and distribution of palm or olive branches, and a procession; in the Greek Church by a procession. The Church of England abandoned the ceremony in 1549.

**Palmyra.** Ancient city of Syria, about 150 m. N.E. of Damascus, the ancient Tadmor. The name probably derives from *palma*, a palm-tree, perhaps from a false analogy between Tadmor and *Tamar*, date palm. In the Seleucid era the city had a flourishing market and temples in the characteristic Greco-oriental style. Under the Roman empire it became a great commercial centre by its position on the trade routes between E. and W. Its ruler Odenathus, c. A.D. 260, made it virtually independent of Rome. His widow Zenobia, even more ambitious, was defeated

by Aurelian, and Palmyra subsequently fell into decay. But splendid ruins, of the late Roman period, still testify to its former greatness. The city, surrounded by walls of the age of Justinian, is intersected by a street with a quadruple colonnade and an imposing triumphal arch. There are sepulchral towers, and among the temples the greatest is that of Bel, in a vast pillared enclosure; other temples were erected to Aglibôl and Yarhibôl, and other deities of the Palmyrenian pantheon. Consult Palmyre, J. Starcky, 1952.

**Palmyra Palm** (*Borassus flabellifer*). Tree of the family Palmae, native of India. It has large fan-

shaped, plaited leaves split at the edges. With the spiny leaf-stalk included, each leaf is 8-10 ft. long. Each tree bears flowers of one sex only—the males in branching catkins, the females in unbranched spikes. The three-seeded brown fruits are each as large as a child's head, produced in clusters of 15 or 20. From the unexpanded flower-spikes palm wine is obtained in quantity, which is evaporated into jaggery, or palm sugar, fermented into toddy and vinegar, and distilled to produce arrack. The trunks of old trees yield hard and durable timber; and the leaves serve a variety of useful purposes, including matting, basket making, hats, umbrellas, fans, and thatch. Seedling plants are used as food, and the pulp of the fruit furnishes a kind of jelly.

**Palni.** Range of hills in Madras state, India. It lies mainly in Madura dist., N.E. of the N. end of the Cardamom Mts. and culminates in Vembadi Shola, 8,218 ft. high.

**Palo Alto.** City of California, U.S.A., in Santa Clara co. It is on the San Francisco peninsula, and 29 m. by rly. S.S.E. of that city. Laid out in 1891 primarily as the seat of Leland Stanford Junior university (*q.v.*), it is also the seat of a military

academy, and a veterans' hospital. Agriculture and fruit-farming are local industries. It was incorporated 1894 and chartered as a city 1909. Pop. (1950) 25,475.

**Palomar.** Mountain in California, U.S.A. Lying 66 m. N. of San Diego, it is a peak of the Santa Anna mountains in the San Bernardino district, and has an alt. of 5,565 ft. Because of its rarefied atmosphere, it was selected as site of an observatory. See Mount Palomar Observatory.

**Palos de la Frontera.** Town of Spain. It is in Huelva prov., near the S.W. frontier, close to the



Palmyra Palm, leaves and fruit

estuary of the Rio Tinto, 5 m. from the Atlantic. From here Columbus sailed, Aug. 3, 1492, on his historic voyage, and here Cortés landed in 1528, after his conquest of Mexico. Pop. (1950) 2,469.

**Palpitation.** Violent throbbing of the heart. It may be due to disorder of the heart, indigestion, excessive smoking, violent exercise, alcoholism, taking too much tea or coffee, or strong emotion. Treatment depends upon the underlying cause.

**Palstave** (Icel. *palstafr*, spud-staff). Winged axe, with the haft-end thinned for fitting into a split wood or horn handle. It is characteristic of the Middle Bronze Age, preceding the socketed axe.

**Palúdrine.** Synthetic drug used in the prevention and treatment of malaria (1-*p*-chlorophenyl-5-isopropylbiguanide). First synthesised, 1943, in the I.C.I. laboratories, Manchester, as a substitute for quinine, it was announced 1946, and the formula made public.

**Palwal.** Town of Punjab state, India. It is 30 m. S.E. of Gurgaon, and is reputed to have been restored by Vikramaditya in 57 B.C. It contains an early Mahomedan mosque, is a grain market, and has a station on the rly. from Delhi to Agra. Pop. 13,606.

**Pamaquin.** Synthetic anti-malarial substance used alone or with quinine or mepacrine.

**Pamela.** Novel by Samuel Richardson, first published, 1741-42, with the title of Pamela, or Virtue Rewarded. The author ascribed the genesis of the book to fellow booksellers having asked him to write a little volume of a common style that should give to country readers useful models of familiar letters. The two or three letters, which were to be devoted to instructing handsome girls, going out to service, how to avoid the snares that might be laid against their virtue, grew into a lengthy epistolary story, which not only had extraordinary popularity, but set the fashion of the sentimental novel. See Novel.

**Pamiers.** City of France. It stands on the Ariège, in the department of that name, 40 m. S. of Toulouse. The chief buildings are the cathedral, which has been modernised, and the Romanesque church of Notre Dame. The site of the castle is occupied by a public promenade. Industries include ironworking, tanning, brick making, and sawing. The city is an agricultural centre, and around are vineyards and nursery gardens. Pamiers grew up around a castle



Palmyra. Ruins of the ancient Temple of Bel



built in the 12th century by a count of Foix. There was an abbey here, and much friction was caused by the conflicting authorities of the count of Foix, the bishop, and the abbot. Fauré and Delcassé were natives. Pop. 12,026.

**Pamir** OR ROOF OF THE WORLD. Greatest mountain knot in the world. It occurs where the plains of N. India (Kashmir) approach most closely those of Asiatic Russia (Tadzhik S.S.R.), and Afghanistan touches China (Sinkiang prov.). From it radiate the Kwenlun, Karakoram, Himalaya, Suleiman, Hindu Kush, Paropamisus and Tian Shan ranges. A series of ridges 16,000 ft. to 18,000 ft. high, rising in mt. Stalin to 24,600 ft., with elevated valleys or pamirs between them, this great highland is almost without vegetation. Politically the greater part belongs to Tadzhik S.S.R. The sparse pop. is Kirghiz.

**Pamlico Sound.** Body of water on the coast of N. Carolina, U.S.A. The largest of many lagoons on the E. coast of the U.S.A., it is separated from the Atlantic by a long, narrow strip of land, with three navigable inlets, and measures about 60 m. by 25 m. Oyster fishing is extensively carried on.

**Pampa.** LA. Province of Argentina. Formerly a territory, it was reconstituted a province in 1951. Entirely inland, W. of the prov. of Buenos Aires, N. of the territory of Rio Negro, it is crossed by the Colorado and Salado rivers. Rlys. from Bahía Blanca cross the S. and N.E. of the state. Agriculture occupies most of the people wheat, alfalfa, maize, and linseed being exported in large quantities; while there are large numbers of cattle and sheep. Santa Rosa is the centre of administration. Area 55,669 sq. m. Pop. 170,000.

**Pampas.** Temperate grasslands of S. America, situated W. of the Paraná river and E. of the Andes. They support vast numbers of cattle and sheep, and produce enormous quantities of wheat.

**Pampas Grass** (*Gynerium argenteum*). Noble grass of the family Gramineae. It is a native of S. America, where it grows on the pampas. It forms a tuft 5-6 ft. in diameter, its long, slender, arching leaves being about 6 ft. long.

The flowers form large, dense, silky, and silvery-white plumes rising to a height of 10 or 12 ft., bearing 40 or 50 plumes.

**Pampas Indians.** Collective term for the S. American Indians upon the Argentine plains. In the N. they were largely of Guaycuru and Guarani stocks. On the true pampas they mingled with the Araucanian Puelche. Usually unclad, they were predatory and warlike, becoming eventually better riders than the Gauchos. They migrated beyond the Rio Negro in 1881. See American Indians.

**Pampero.** Severe line squall, usually accompanied by rain, thunder, and lightning, experienced in Argentina and Uruguay in the neighbourhood of the Plate estuary. It is associated with depressions moving W. to E.; as the depression passes the wind suddenly shifts to S. or S.W. with a great drop in temperature.

**Pamphlet.** Treatise of short or moderate length, usually unbound and of small format, and generally dealing with matters of current public interest. In a technical sense, a pamphlet is a printed work with eight or more pages of matter, the whole not exceeding five sheets.

The derivation of the word is obscure, some authorities claiming that it comes from Pamphilus or Pamphila, a Latin poem which circulated widely in medieval times. From the time of the Reformation the pamphlet has been of considerable historic importance and often exercised much political, ecclesiastical, and social influence. Wycliffe, Erasmus, Luther, and Calvin used it, and the Civil War in England produced an astonishing crop of controversial works in pamphlet form, many, such as those of John Milton, of great interest. One of the most celebrated collections is that of Civil War pamphlets in the British Museum, numbering over 22,000.

Defoe, Swift, William Law, "Junius," and Newman represent various aspects of pamphlet-writing. Periods of war and revolution bring the pamphlet into active life, e.g. 1789-

1815, 1848, 1914-18, 1939-45. During the last period the pamphlet form was particularly useful because of the great scarcity of

paper, and govt. departments played a leading part in repopularising it. See Tract.

**Pamphylia** (Gr., land of all tribes). Ancient region on the S. coast of Asia Minor, between Lycia on the W. and Cilicia on the E. Its inhabitants were of mixed race, partly Semitic and Greek. Pamphylia belonged successively to the Persian and Macedonian empires and to the kingdom of Syria and of Pergamum, from which, in 133 B.C., it passed to Rome.

**Pamplona.** City of Spain, capital of the prov. of Navarre. It is 16 m. from the French frontier, among the foothills of the W. Pyrenees, on the Arga, a tributary of the Aragon, 195 m. N.E. of Madrid. It is a rly. centre for the prov. The Gothic cathedral was built in 1397 over the ruins of the earlier edifice of 1100. The Cortes of Navarre met in the Sala Preciosa in the cathedral. The bull-ring seats 13,600. Pamplona was the capital of the ancient kingdom of Navarre. It was rebuilt by Pompey in 68 B.C., taken from the Romans by the Visigoths in 476, sacked by Charlemagne, unsuccessfully attacked by Moors and Castilians, besieged by Wellington, and by Carlists. Pop. (1950) 72,394.

**Pamplona.** City of Colombia, in the dept. of Santander. It is 40 m. S. of Cucuta near the Venezuelan frontier. Founded by the Spaniards in 1549, it was for a time a valuable source of gold. Now it exports coal, dyewoods, coffee, cacao, gum, resin, and wheat, besides some gold. There are breweries, distilleries, and textile mills. Pamplona is the see of a bishopric. Pop. (est.) 24,600.

**Pan.** In Greek mythology, the god of shepherds. Generally regarded as the son of Hermes, and especially associated with Arcadia, his worship afterwards spread throughout all parts of Greece. He was of monstrous appearance, with the horns and legs of a goat. He was the inventor of the flute, or shepherd's pipe, which he made from reeds, after the nymph Syrinx, whom he had pursued, had at her own request been turned into a reed by the gods. The sudden apparition of Pan to travellers caused terror, whence the word panic. The legendary representation of the devil is a memory of Pan and similar beings.

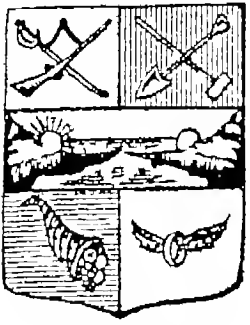
**Panaetius.** Stoic philosopher of the 2nd century B.C. A native of Rhodes, educated at Pergamum and Athens, he came to Rome, and was there admitted to the friendship of Laelius and Scipio the



Pampas Grass. Tuft of the South American grass

Younger, later becoming the foremost teacher of Greek philosophy in Rome and in Athens.

**Panama.** Republic of Central America, formerly a dept. of the republic of Colombia, with which



Panama Republic arms

it was united for 82 years. In 1903 discussions were opened by the U.S.A. with a view to taking over the existing canal works of Ferdinand de Lesseps and constructing a canal across the isthmus. A treaty, giving Colombia \$10,000,000 (then £2,000,000) and \$250,000 (£50,000) a year in exchange for a six-m. wide strip of land was approved by the U.S. senate but rejected by Colombia. The people of Panama, afraid that the U.S.A. might choose the alternative canal route through Nicaragua, rebelled Nov. 3, 1903. The U.S. navy deterred Colombian troops from landing, and ten days later the govt. of the U.S.A. recognized the independence of the new republic of Panama. By a treaty with the U.S.A., entered into in 1914 and ratified in 1921, Colombia recognized the independence of Panama, receiving from the U.S.A. \$25,000,000 (£5,000,000) in compensation for loss of territory.

The republic occupies the isthmus connecting N. and S. America and lies between the Caribbean sea to the N. and the Pacific ocean to the S. It covers an area of 28,576 sq. m. It is divided into seven provs., Bocas del Toro, Chiriqui, Coel , Colon, Los Santos, Panama, and Veraguas. The chief town, after Panama city (*v.v.*), is Colon (pop. 45,000) on the Atlantic.

The first American trans-continental rly. was built across the fifty-mile narrows of Panama. A concrete highway now also traverses the isthmus, which can be crossed in 1½ hrs. by car. Panama also has important airfields.

Two mt. ranges enclose valleys and tablelands with excellent pasturage. On the mt. slopes there are extensive forests. In the lowlands the climate is tropical and the Panamanian jungle is one of the extraordinary sights of America with its giant humming birds,

multi-coloured parakeets, snow-white egrets, alligators, green lizards, snakes, scorpions, tapirs, pumas, and hosts of monkeys.

The chief exports are bananas, cocoa, coconuts, and pearls.

The pop. (805,285 in 1950) is highly diverse and drawn from all parts of the world. Indians of full blood comprise about 10 p.c., Negroes about 13 p.c. Spanish is the official language, though English is much spoken.

A new constitution, promulgated March 1, 1946, extended the term of the president from four to six years and made him ineligible to succeed himself. The national assembly, which meets biennially on Jan. 2, has 32 members elected for six years. Women have equal political rights with men.

The R.C. religion prevails, but there is religious freedom. Primary education is free and compulsory from seven to 15. The national university, opened Oct. 7, 1935, is at Panama city. There is no army or navy.

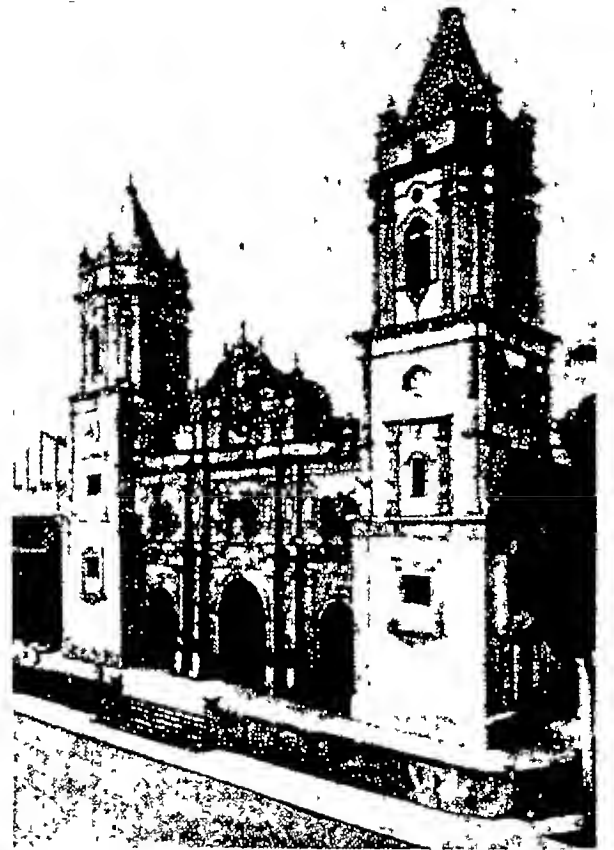
Panama declared war on Japan Dec. 8, 1941, on Germany and Italy Dec. 12. She took no active part in the war, but in 1942 leased to the U.S.A. 134 bases for the protection of the Panama canal (*q.v.*); 120 were returned at the end of the Second Great War. Negotiations for the retention of the other 14, including a bomber base at Rio Hato, for a further period of 5-10 years, broke down Dec., 1947, with the unanimous refusal of the assembly to ratify an agreement to that effect.



Panama, Central America. Ruins of the old cathedral, looted and burned by Morgan, the pirate; top, right, façade of the present cathedral

**Panama.** Capital of the republic of Panama. It lies close to the Pacific entrance to the Panama canal and is 47 m. from Colon on the other side of the isthmus, with which it is connected by rly. and a concrete motor road. Settled in the 17th century, Panama city

was sacked and destroyed by Morgan, the buccaneer. The present city blends the charm of old Spain with American progressiveness. The bazaar, with its curio sellers from India, China, and other countries, has an Asiatic atmosphere. The twin-towered cathedral, finished in 1776, has its domes sheathed in mother-o'-pearl. Other buildings of note are the national university, the national theatre (one of the finest of its kind), the city hall, the government palace, the post office, and many fine churches, of which that of S. Jose is celebrated for its golden altar, said to have been preserved from the buccaneers by being painted over to represent grained wood. The climate is good from Jan. to April; during the rest of the year the rainfall is heavy. The mean temp. is 80° F.



There are breweries, shoe and furniture factories, and native potteries. There is a ferry across the Pacific entrance connecting La Boca, Balboa, and Panama city on the E. bank of the canal with Thatcher highway on the W. Panama has an active night life. Pop. (1950) 127,874.

**Panama, GULF OF.** Large inlet of the Pacific ocean in Panama. It lies between the peninsula of Azuero and the S.E. littoral of the republic, and is 140 m. wide at its mouth. At its head, some 120 m. N. of the mouth, is the entrance to the Panama canal.



**Panama, Isthmus of.** Narrow neck of land connecting N. and S. America. It lies E. and W., with the gulf of Panama on the Pacific side and the gulf of Darien on the Atlantic side. Columbus landed on the isthmus in 1502, and here Balboa was the first European to see the Pacific ocean. It averages 70 m. across, but is 32 m. at its narrowest. See Darien.

**Panama Canal.** An artificial waterway for navigation through the isthmus of Panama and connecting the Caribbean sea with the Pacific ocean. In 1523 Charles V of Spain, convinced that nature had provided no waterway through the isthmian narrow lands, directed Hernando de la Soma to explore the isthmus. Plans were drawn in 1529, and from that time projects were made for the construction of an artificial channel across the isthmus. The opening of the Suez Canal, 1869, was followed by a French attempt to construct a canal at Panama under the direction of de Lesseps; it failed partly through financial mismanagement and partly through the unhealthy conditions at the isthmus—the cause and treatment of malaria were not then understood; work on a sea-level canal, started in 1888, stopped the next year.

The war with Spain, 1898, impressed the U.S.A. with the desirability of quicker water-communication between the U.S. Atlantic and Pacific coasts; and by a treaty ratified Feb. 26, 1904, it acquired from the new republic of Panama (*q.v.*) a 10-m. strip of territory, five m. on each side of the route of the proposed canal, and the right to construct and main-

tain in perpetuity an inter-oceanic canal, for a payment of \$10,000,000 (then £2,000,000) and \$250,000 (£50,000) a year from 1912. The ceded territory, called the Canal Zone, is 648.01 sq. m. (275.52 sq. m. water). Pop. (1950) 52,822 (10,000 army and navy personnel)

In 1904 the U.S.A. also took over the rights and property of the New Panama company, which had been "caretaking" at the isthmus since the bankruptcy of the Lesseps company.

The two most important features of the narrowlands of Panama are the Chagres river and the Culebra mts. The river, often swelling to a torrent, crossed the route of the proposed canal; the mts. run down the isthmus near the Pacific coast, interposing a barrier which would have to be cut. The French had chosen to build at tide-level; the Americans decided to build a high-level waterway.

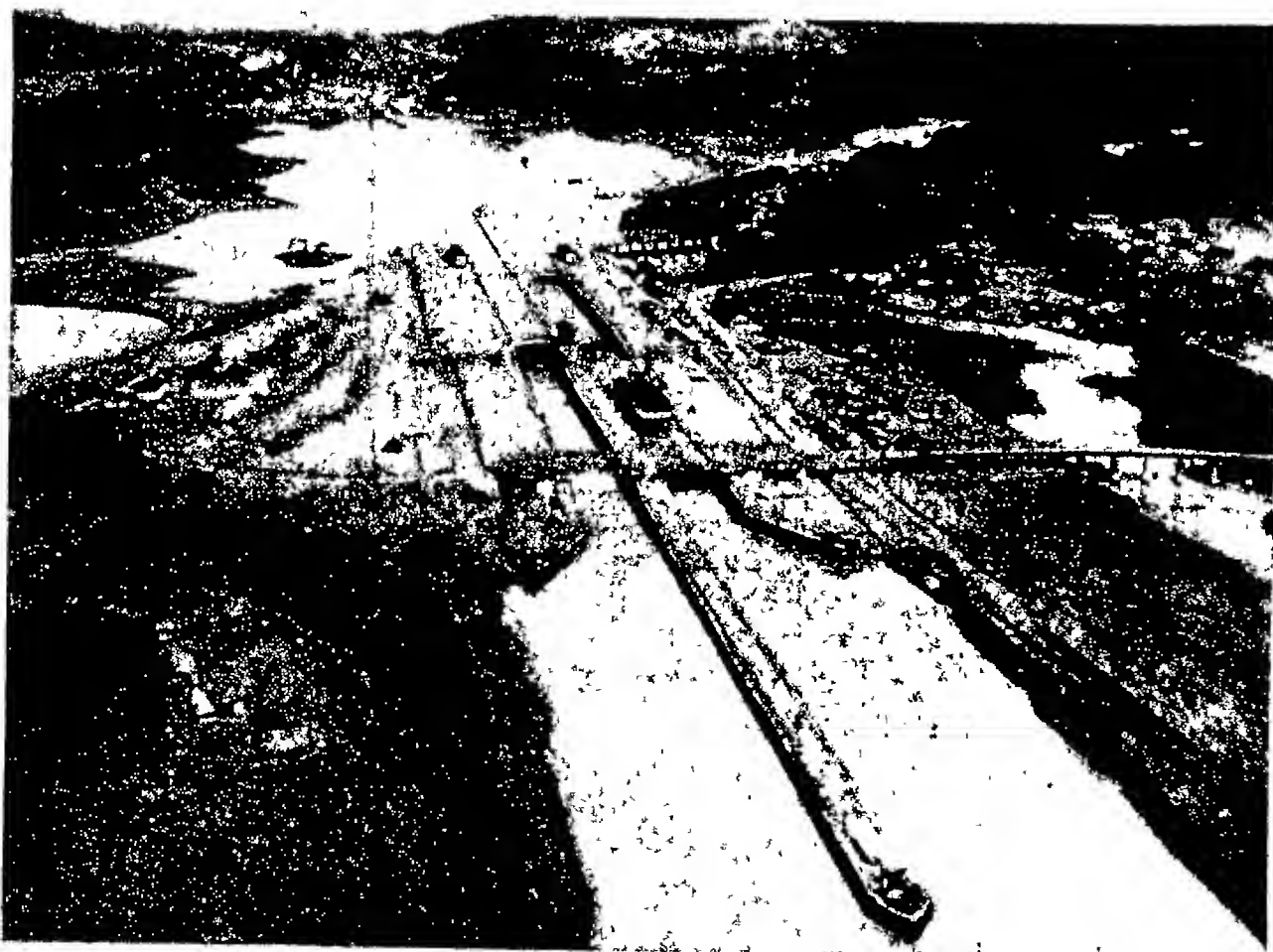
Near the outlet of the Chagres into the Caribbean the Gatun dam, 8,400 ft. long, was built across the channel of the river, and the waters accumulated behind it to form Gatun lake, 164 sq. m. in extent, at



Panama Canal. Map of the great waterway, constructed 1904-13, through which ocean-going vessels can move between the Caribbean and the Pacific

an alt. of 85 ft. The channel of the canal runs for about 30 m. through the lake, to the level of which ships are lifted by locks at either end. The channel of the canal begins about 4½ m. out to sea in Limón bay in the Caribbean at a depth of 41 ft. Through the sea and the shore it runs for 8 m. until it reaches the first locks, the gigantic three-stepped, two-flighted stairways at Gatun. Beyond Gatun lake the channel is compressed into the 8 m. Gaillard cutting through the Culebra mts. as far as the Pedro Miguel lock at the S. end of the 85-ft. above-sea-level section; this lock drops the vessel 30 ft. to the little Miraflores lake, from which the Miraflores locks drop it to the sea-level salt-water stretch of 8 m. to the Pacific. Minimum width of the canal is 300 ft. at the bottom, minimum depth is 41 ft.

Construction was completed in 1913 at a cost of \$366,650,000 (£73,330,000), and the canal was informally opened Aug. 15, 1914, by the passage of the 9,000-ton Ancon. It was formally opened July 12, 1920, by proclamation of the president of the U.S.A. A dam completed near Alhajuela in 1935 created Madden lake, 22 sq. m. in extent, and 260 ft. above sea-level, to maintain the level of Gatun lake in dry seasons. Construction of a new set of locks approx. parallel to the existing locks began in 1940. Passage through the canal normally takes 7-8 hrs.; it has, however, been completed in 4 hrs.



Panama Canal. Air view of the two-stepped Miraflores lock by which vessels are lowered from the Miraflores lake to Pacific level

10 mins. It has been estimated that 10,000 vessels could pass through it in a year. In 1946 the number which went through was 3,747, carrying a total cargo of 15 million tons; they paid nearly \$15 million in tolls. *Consult Panama: the Canal, the Country and the People*, A. Edwards, 1914; *The Panama Canal in Peace and War*, N. J. Padelford, 1942.

**Panama Hat.** Light hat which can be folded without injury. It is made from the young leaf of a palm, the *Carludovica palmata*, which grows in Central America, also in Ecuador and Columbia, where the hat was for long exclusively manufactured.

**Pan-American Airways.** Air transport company of the U.S.A. Formed in Oct., 1927, to maintain a service between the U.S.A. and Bermuda, it soon inaugurated routes throughout Latin America. In Nov., 1935, it started a trans-Pacific service to China; in 1938 regular flights to New Zealand; in June, 1939, a mail and passenger service across the Atlantic. The co. was the first to instal high speed land aircraft on the Atlantic route. In 1947, when Pan-American Airways covered 53,000 route miles serving 47 countries, a round the world service was begun. Annual distance flown was some 1,100 million miles.

**Pan-American Conference.** Properly, the international conference of American states called periodically by the Pan-American Union; the term is loosely used for any conference of representatives of the American republics.

Simon Bolivar (*q.v.*) called a Pan-American conference in Panama in 1826, but only Great Colombia, Guatemala, Mexico, and Peru attended, although the U.S.A. had named a delegate. A treaty of union, league, and confederation was signed but never ratified. The conference officially recognized as the first Pan-American conference was held at the instance of the U.S.A. in Washington in 1890, Santo Domingo being the only absentee. The second Pan-American conference in Mexico City, Oct., 1901, was attended by all the republics. Subsequent conferences took place at Rio de Janeiro, Brazil, 1906; Buenos Aires, Argentina, 1910; Santiago, Chile, 1923; Havana, Cuba, 1928; Montevideo, Uruguay, 1933; Lima, Peru, 1938; Bogota, Colombia, 1948. The work of all these conventions was directed towards increased economic cooperation between the American republics and

solidarity in the event of aggression against an individual state. Machinery was set up for resolving disputes between American republics, and the 1933 meeting played an important part in ending the war between Paraguay and Bolivia.

Other meetings loosely called Pan-American conferences were *e.g.* the Pan-American federation of labour conference at Laredo, Texas, 1919; the Washington conference on arbitration, 1928; and the conference at Buenos Aires in 1936, at which President Roosevelt put forward his plea for a "good neighbour" policy.

During the Second Great War several conferences were held. That held at Rio de Janeiro in 1942 led to the setting up of the Inter-American Defence Board to recommend measures for the defence of the continent. At the Mexico City conference of 1945 it was decided that an international conference of American states should be held at intervals of four years. *See* Chapultepec; Havana, Act of.

**Pan-American Highway,** OR INTER-AMERICAN HIGHWAY. Motor road under construction in the American continent, to run eventually from Alaska to Chile. The Alaska Highway (*q.v.*) links Alaska with the U.S. road system; and from Nuevo Laredo, Texas, the highway leads by way of Mexico City, Guatemala, Tegucigalpa (Honduras), and Costa Rica to Panama city; thence it follows the W. coast of S. America as far as Valparaiso, Chile, where it turns E., crossing the Andes to terminate at Buenos Aires, Argentina. An alternative inland route branches off at Vitor, near Arequipa, Peru, and runs E. to La Paz, Bolivia, and then S.E. to Buenos Aires.

From the Texas border to Panama city the road measures 3,300 m., of which 2,487 m. were in 1946 suitable for motor-traffic in all weathers; impassable gaps in Mexico, Honduras, Costa Rica, and Panama totalled 567 m. The route from Panama to Buenos Aires via Valparaiso measures 5,757 m., of which over 4,000 m. were suitable for all weathers in 1946; via La Paz, the distance is 5,433 m., of which some 3,800 m. are all-weather road. About one-third of the sections described as all-weather road is paved.

**Pan-American Union.** Organization for the promotion of friendly relations and cooperation between the countries of the Americas S. of the Canadian border. Bolivar first made an attempt in

1826 to form such a union. J. G. Blaine when secretary of state of the U.S.A. made a second attempt, cut short by the death of President Garfield in 1881. He was successful in 1890 under President Harrison after the first conference of the American states. Originally called the international bureau of American republics, its name was changed in 1910 to the Pan-American Union. Its h.q., a magnificent white marble palace in Washington, was the gift of Andrew Carnegie. Its governing board consists of the diplomatic representatives at Washington of all the Latin-American republics, with the U.S. secretary of state. The union is financed by contributions from the member nations in proportion to their pop. One of its normal functions is to draw up the programme for the Pan-American conferences. The admission of Canada to the union has been mooted, but without result. *See* Pan-American Conference.

**Pan-Arabia.** Term for the Arab world. The Pan-Arabia envisaged by, *e.g.*, T. E. Lawrence, included Syria and the Lebanon, Iraq, Palestine and Transjordan, and the whole of Arabia including the Yemen, Hadhramaut, Oman, etc., under the rule of the Hashimite kings of the Hejaz. Developments after the First Great War put an end to such a concept; but at a Pan-Arab conference held at Alexandria, Sept.-Oct., 1944, the Arab League was set up with the support of Iraq, Saudi Arabia, Syria, the Lebanon, Transjordan, and Egypt. *See* Arabia; Arab League; Lawrence, T. E.; Palestine; Syria.

**Panathenaea.** Festival of ancient Athens. It was held annually in Aug. in honour of Athena. Every fourth year the festival was celebrated on a splendid scale; it was then called the greater Panathenaea, the intervening festivals being known as the lesser Panathenaea. The festival, of legendary origin, had grown by the time of Pericles to great dimensions, and musical and athletic contests were regularly included.

**Panay.** Sixth in size of the Philippine Islands. The extreme W. island of the Visayan group, it lies between Negros and Mindoro islands, and covers 4,446 sq. m., or with adjacent islands an additional 300 sq. m. Panay has a mountainous surface, ranges extending from the centre to its three corners, with peaks exceeding 5,000 ft., Madias, the culminating summit, being 7,265 ft. The



N. and E. coasts are well indented, and contain several good harbours, Iloilo being one of the finest in the Philippines. The principal rivers are the Jalaur and Jaro. Agriculture is the chief industry, and rice, sugar, and copra are extensively cultivated. Pineapples, bananas, and mangoes are grown. In 1569 the Spaniard Legaspi conquered Panay from his first base at Cebú. From the headquarters he established at Iloilo he proceeded to the conquest of Mindoro and Luzón.

During the Second Great War Panay was in Japanese occupation from May, 1942. Heavily bombed by U.S. carrier-based aircraft in Sept., 1944, it was invaded March 19, 1945, by U.S. infantry who landed 14 m. W. of the capital, Iloilo, achieving a complete surprise of the enemy. Iloilo was captured and all serious opposition overcome March 21. Pop. 800,000. See Iloilo.

**Panay Incident.** On Dec. 12, 1937, the U.S. gunboat Panay was proceeding up river from Nanking, China, which was being shelled by Japanese guns. When some 25 m. from the city she was sunk by bombs from a Japanese aircraft. Four separate attacks were made, and at the same time three tankers belonging to the Standard Oil co. were set on fire. The U.S. government having sent notes of protest, the Japanese ambassador in Washington broadcast on Dec. 24 an apology for the attack, and on Dec. 29 his country's reply to the protests was received and acknowledged as satisfactory.

**Pancake.** Thin, flat cake fried in butter or fat. It is made of a thin batter, turned in the pan by tossing. The origin of eating pancakes on Shrove Tuesday, the day before Lent, is a survival of the old custom of feasting on that day, pancakes being fried in the grease that was forbidden in Lent. For 300 years past a ceremony known strictly as the Greeze and popularly as tossing the pancake has been enacted at Westminster School on Shrove Tuesday, the boys scrambling for it and the successful one receiving a guinea from the dean.

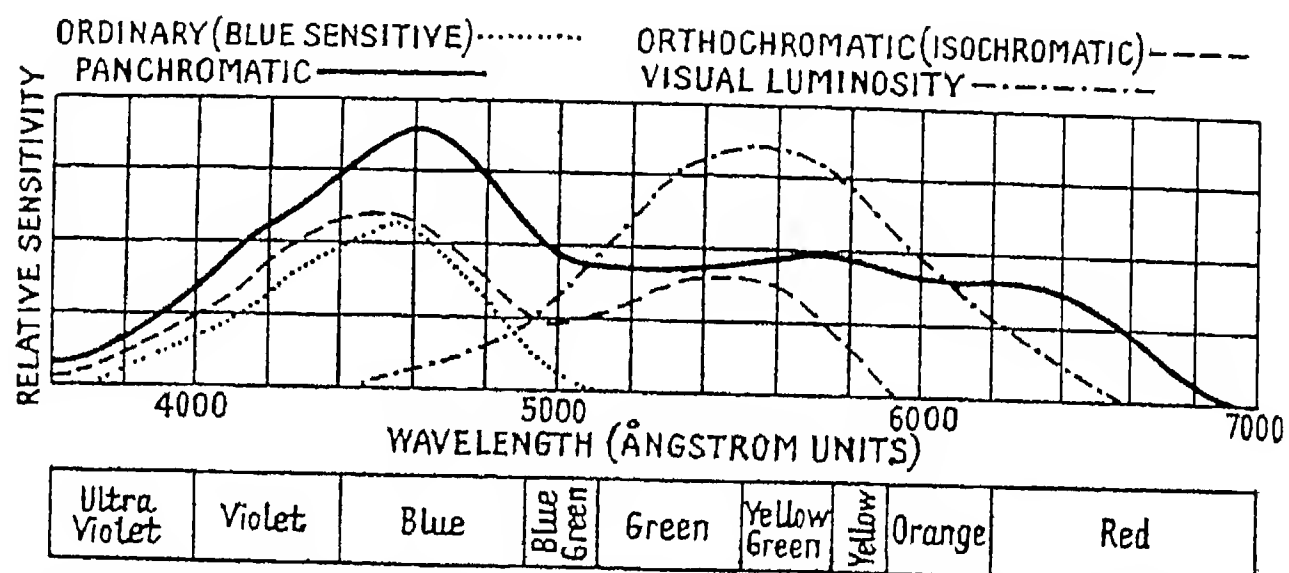
**Panchatantra** (Skt., five books). Oldest known collection of fables. It is the origin of the Fables of Bidpai (*q.v.*) and one of the sources of the Hitopadesa (*q.v.*) or Book of Good Counsels. A work in five tantras or sections, it derives from a treatise in which the ancient Brahmans of India inserted the choicest treasures of

worldly wisdom and the perfect rules for government, and then presented them to their rajas. Written in Sanskrit, it has been rendered into the chief languages of Asia and Europe.

**Panchayat.** Name given to the committee that manages the affairs of an Indian village. In some places it consists of the heads of the various households; in others of a fixed number of persons chosen by their fellows. See Village Community.

**Panch Mahals** (five districts). Dist. of India, in Ahmadabad div. of Bombay. It is a small district, area 1,606 sq. m., bounded W. by the Mahi river. The annual rainfall is 38 ins. Rice and pulses are grown, and food grains occupy half the tilled area. It was British during 1853-1947. Godhra is the administrative headquarters. Pop. (1951) 1,148,432.

**Panchromatic Photography.** Panchromatic emulsions are sensitive to all colours; but not in



Panchromatic Photography. Diagram showing the relative sensitivity of photographic emulsions to the colours of the spectrum as compared with the sensitivity of the human eye

the same proportions as the human eye, which perceives a greater visual luminosity in the yellow-green region than any photographic emulsion unless the latter is balanced by the use of correction filters. Panchromatic plates are usually most sensitive to blue, but many fast varieties achieve their great speed by oversensitiveness to the red end of the spectrum, and so are better suited to half-watt tungsten light than to daylight. This makes them valuable in artificial light and out of doors at morning and evening. The greatest value of the panchromatic emulsion, however, lies in the fact that by the use of correction or contrast colour filters any colour in the subject may be accentuated or subdued at will. See Colour Filter.

**Pancorbo.** Village of Spain, in Burgos prov. It is 124 m. S.W. of Irún and stands on the Ebro.

It has two ruined castles, and gives its name to the Garganta or gorge of Pancorbo, a rocky ravine in the Pyrenees, leading to Castile. Pop. (1950) 1,156.

**Pancras.** Patron saint of children. He is said traditionally to have been born at Synnada, in Phrygia, of noble parentage, and to have been taken in childhood to Rome, where he was baptized by the pope. During Diocletian's persecution he was asked by the emperor to give up Christianity, and on refusing was beheaded at the age of 14. His festival is May 12, which makes him one of the Ice Saints (*q.v.*). Numerous churches and a London borough are named after him. See St. Pancras.

**Pancratiun** (Gr. *pan*, all; *kratos*, strength). Event in the Olympic and other games of ancient Greece. The term means a comprehensive contest, wrestling and boxing combined. It was a trial of strength in which the two unarmed competitors were at

liberty to use any means, even strangulation. See Ludi.

**Pancratiun.** Genus of bulbous herbs of the family Amaryllidaceae. Natives of the Mediterranean region, the Canaries, and W. Indies, they have strap-shaped leaves and large funnel-shaped, fragrant white flowers, forming a large umbel, on a tall stem. *P. illyricum* and *P. maritimum* are natives of S. Europe.

**Pancreas.** Organ situated behind the stomach. About 6 to 8 ins. long, it contains a duct which opens into the second part of the duodenum in contact with the common bile duct. The pancreas



Pancreas. The organ shown in section

secretes a juice which plays an important part in the digestion of food. It contains four enzymes or ferments, namely trypsin, which splits up the proteins of the food; amylase, which converts starch into maltose, a form of sugar; lipase, which splits up fats; and an enzyme which causes milk to curdle. The pancreas of sheep is called sweetbread (*q.v.*).

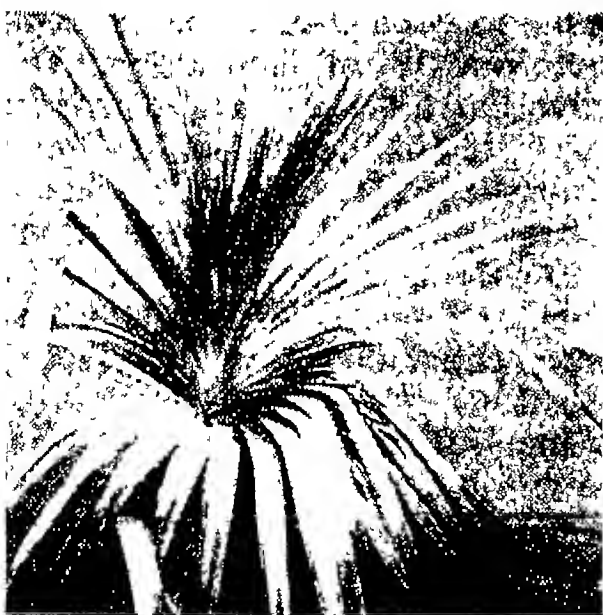
**Panda** OR WAH (*Aelurus fulgens*). Small mammal of the order Carnivora. It is a native of the Himalayas only. Allied to the racoons it resembles the kinkajou.



Panda. Small Himalayan cat-bear allied to the racoons.  
W S Berridge, F.Z.S.

jou (*q.v.*) in having the claws partially retractile. Its total length is about 2½ ft., but somewhat more than half this measurement is due to the long bushy tail, which has suggested the alternative name of cat-bear. Its fine, dense coat of fur is chestnut-brown above and black beneath. Mainly nocturnal and arboreal in habits, it is found on the outskirts of the pine-woods. See Giant Panda.

**Pandanaceae.** Family of trees and shrubs. They are natives of the tropics, mainly of the Old



Pandanaceae. Leaves of the Screw Pine, *Pandanus utilis*

World, and have long, narrow, rigid leaves, the bases of the older ones sheathing the younger. The small flowers are in crowded clusters, the two sexes on separate plants. There are only two genera, *Freycinetia*, climbing shrubs, and *Pandanus*, the screw pines.

**Pandarus.** In Greek legend, a Lycian archer, who fought for Troy and was slain by Diomedes.

From the part he plays as a go-between in the story of Troilus and Cressida as told by Boccaccio, Chaucer, and Shakespeare is derived the word pander.

**Pandean Pipes** OR PAN'S PIPES. Simple musical instrument of extreme antiquity. It consists of a row of tubes, stopped at their lower ends and bound together, and blown across their tops by the performer. The number of tubes has varied, and the larger instruments are capable of considerable effects, though in England chiefly associated with Punch and Judy shows.

**Pandect** (Gr. *pandektēs*, all-receiver; *pan*, all; *dekhesthai*, to receive). Term apparently first applied to an encyclopedic work. In the plural, it is specially used of the digest or analysis of the works and legal opinions of the classical Roman jurists, the chief of whom were Papinian and Ulpian, which had been approved by earlier emperors. This digest was in 50 books, and was compiled at the instance of the emperor Justinian. With the Institutes and the Codex the Pandects formed the Corpus Juris Civilis, a complete system of Roman civil law. See Roman Law.

**Pandemic.** Term for an epidemic on a vast scale, attacking a large area such as a continent.

**Pando.** Department of Bolivia. It is situated in the N.W. corner of the country on the Brazilian frontier and is one of the three low-lying depts. Area 24,650 sq. m. Pop. (1950) 19,804. The capital is Cobija (pop., 1950, 1,726).

**Pandora** (Gr., all-gifted). In Greek mythology, the first woman on earth, made from clay by the god Hephaestus at the command of Zeus, who desired to avenge himself on Prometheus (*q.v.*). The gods were so pleased with the result of the skill of Hephaestus that they vied with each other in endowing her with various physical and mental gifts. Pandora became the wife of Epimetheus, brother of Prometheus. In his house was a box which he had been forbidden to open, but Pandora, overcome by curiosity, opened the box, and let out all the evils that afflict mankind. She shut the box in time to prevent the escape of Hope.

**Pandour.** Term formerly used to designate members of a body of Austrian infantry, first recruited near the village of Pandur, in S. Hungary. They were noted for their savage methods of warfare. The word is extended to indicate robbers and marauders.

**Pandulf** (d. 1226). Papal legate. Of Roman birth, he early entered

the service of Innocent III and first appeared in England, on a mission from the pope, in 1211. On his next visit, in 1213, John made complete submission to the pope; and at Runnymede Pandulf took the king's side, repudiating Magna Carta, and ordered the suspension of Archbishop Langton for refusing to carry out the papal sentences. In the same year he was elected bishop of Norwich. Made papal legate in 1218, Pandulf soon became the virtual ruler of England. In 1221 he returned to Rome, and died Sept. 16, 1226.

**Panel** (Old Fr., a little sheet). In English law, the list of jurors returned by the sheriff to serve at a trial. Hence a jury is said to be empanelled. In Scots law, the accused in a criminal trial is called the panel. The word is generally used for any list of names from which a choice can be made.

**Panelling.** Covering of a surface in a building, such as a wall, door, or ceiling, formerly with panels, i.e. raised or sunk compartments, usually framed at the edges. The material used is wood, stone, or plaster. In the past the division of a plaster ceiling by breaking it up into panels has been a favourite form of decoration. Wood panelling, as a mural decoration, was introduced into England in the 15th century.

In Elizabethan and Jacobean work the small wood panel appears, sometimes with a coloured inlay, and with gradually increasing elaboration of the mouldings. Ceiling plaster panels become correspondingly rich. The size of wood panels was greatly increased after the middle of the 17th century, developing into the long oblong of the Palladian style, with very much bolder mouldings. The Italians of the Renaissance panelled both the inside and outside of their buildings with stone or marble, and the use of these materials was adopted sometimes by Wren (*q.v.*) in England. The classic taste of Robert Adam reduced the panel in the 18th century to more reasonable proportions, especially in the treatment of doors; the moulding was simplified, and it became the fashion to paint panels white or cream.

The introduction of plywood towards the end of the 19th century revolutionised interior decoration. While the word panelling remained in use, a principal object of the architect was to eliminate the panel. Veneered plywood was often used to cover completely walls of large area in one plane,



except for a protecting skirting, and possibly an unobtrusive cornice. The aesthetic appeal was thus found in large unbroken surfaces, the beauty of the veneer's figure and colour, and perfect craftsmanship. See Ceiling; Gibbons, Grinling; Mahomedan Art; Mural Decoration. Walter Coventon

**Pangani.** Dist., river, and town of E. Africa, in Tanganyika Territory. The dist. lies S. of the Tanga and Wilhelmstal districts and N. of the Bagamoyo district, and borders on the E. upon the Indian Ocean. The town is situated at the mouth of the river and has a considerable maritime trade. The river is navigable over considerable distances for small craft. Pangani is also the name of two Falls, one on the Pangani, and the other on the Rufiji river, below its junction with the Ruaha.

**Pange Lingua** (Lat. *pangere*, to record; *lingua*, tongue). First words, used as the name, of a Latin hymn in honour of the Holy Eucharist. Composed by S. Thomas Aquinas, it begins, *Pange, lingua, gloriosi corporis mysterium* (Now, my tongue, the mystery telling Of the glorious body, sing), and was appointed for the feast of Corpus Christi in the Sarum, Hereford, York, Aberdeen, and Paris breviaries. It was translated into English by E. Caswall and J. M. Neale. See Aquinas, Thomas; Corpus Christi; Tantum Ergo.

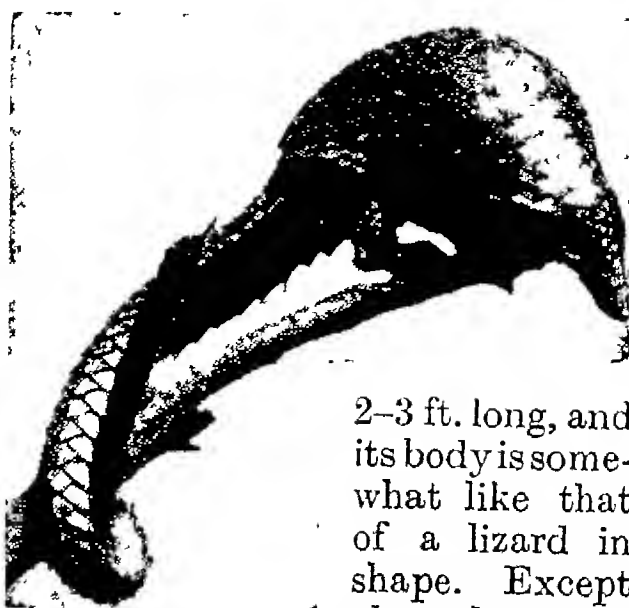
**Pangenesis** (Gr. *pan*, all; *genesis*, generation). Theory of heredity formulated by Darwin in 1868 as a provisional hypothesis. It endeavoured to satisfy the claims of the doctrine of Lamarck to the effect that acquired characters were transmitted to offspring. It was an effort to understand how characters could be continued from one generation to another. Darwin supposed that the cells composing the tissues of the body gave off minute portions of themselves—"gemmules," he termed them—and that these found their way to the germinal area and constituted the germ-plasm from which the next generation was to spring. The discovery of the part played by chromosomes in heredity rendered this hypothesis unnecessary. See Evolution; Heredity.

**Pan-Germanism.** International term adopted to describe originally the *Alldeutscher Verband* and the imperialist movement represented by it; subsequently the whole imperialist and militarist German policy, including that of the Nazi movement. The *Alldeutscher Verband*, founded in 1891

and claiming the inheritance of Bismarck's ideas (which, however, were essentially Little German in outlook), was officially meant to foster cultural contact with Germans under other European rule. It preached in fact German expansion by threat or actual making of war, and predominance in the E. and S.E. Particularly active just before and during the First Great War, it claimed Bernhardt (*q.v.*) as a protagonist, and in the Fatherland party, formed 1917 by Tirpitz (*q.v.*), found its political expression. Though originally backed mainly by extreme conservatives, and parts of the upper classes, the Pan-German movement was revived and developed by Hitler. See Germans Abroad.

**Pangloss, Doctor.** Character in Voltaire's *Candide* (1759). This brilliantly conceived figure of satire, with his many inconsistencies, quotes Leibniz's famous maxim that "all is for the best in the best of all possible worlds," but applies it with little or no justification.

**Pangolin** (*Manis*). Genus of edentate mammals, occurring in S. Asia and Africa. The pangolin is



Pangolin, the African species

2-3 ft. long, and its body is somewhat like that of a lizard in shape. Except about the mouth and on the under parts, it is entirely covered with large horny scales; and the feet are provided with strong and powerful claws. No teeth are present, but there are horny ridges on the lower jaws; the tongue is long and wormlike, as in the anteaters. The pangolin rolls itself into a ball when disturbed.

Asiatic pangolins, which comprise three species, live in crevices of the rocks, and in long burrows terminating in a chamber sometimes as much as 6 ft. across. The animals are strictly nocturnal, and feed on termites. There are four species in Africa. They resemble the Asiatic species in habits, but have a curious method of resting on a tree-trunk by clinging with the hind feet and tail, while the

body is thrown back till it is nearly horizontal.

**Panick Grass** (*Panicum*). A large genus of grasses of the family Gramineae. They are mostly



Panick Grass. Leaves and flower spray of *Panicum miliaceum*

natives of the tropics, but a few are widely distributed in temperate regions. The flowers are clustered in spikes or branching sprays. Many species are useful fodder grasses, and a few of them yield grains large enough for use as human food. *P. miliaceum*, which yields Indian millet or warree, is cultivated in S. Europe. *P. maximum* of the W. Indies attains a height of 6-10 ft., and another large species is the Angola grass (*P. spectabile*) of Brazil. Several are grown as ornamental grasses.

**Panicle** (Lat.). In botany, term denoting the arrangement of the flowers in a raceme or spray with branches, as in the oat. See Inflorescence.

**Panipat.** Town of Punjab state, India, in Karnal dist., 50 m. N. of Delhi and W. of the Jumna. Decisive battles were fought here on April 21, 1526, when Babar (*q.v.*) triumphed; Nov. 5, 1556, when a victory placed Akbar on the throne of Delhi; and Jan. 7, 1761, when Ahmad Shah of Afghanistan defeated the Mahrattas. Pop. (1951) 54,981.

**Pan-Islamism.** Concept of a union of Muslim powers opposed to the Christian powers of Europe. The expression dates from the 1880s, when this was regarded as something new and threatening; but in fact Muslim political theory has always embodied hostility to unbelievers. Pan-Islamism was bound up with the efforts of the Turkish sultan Abdul Hamid II to win recognition as caliph and spiritual head of all Muslims. The movement declined with the prestige of Turkey. By 1919 it was kept alive only by the Khilafat movement in India, and virtually perished with the caliphate in 1923.

**Panixer.** An Alpine pass in Switzerland. It connects cantons Glarus and Grisons over the Tödi range, and leads E. of the Hausstock from the valley of the Sernf to Panix on a small affluent of the Vorder Rhine. Its alt. is 7,897 ft. and the top is marked by two tablets which record the retreat, Oct. 5-10, 1799, of the Russians under Suvorov.

**Panjandrum.** Nonsense word made up by S. Foote, and occurring in a fantastic composition intended as a memory test. A sentence frequently quoted is as follows: And there were present the Picinnies, and the Joblillies, and the Garyulies, and the Grand Panjandrum himself, with the little round button at top. Hence the word came to be used by 19th century writers as a synonym for any pretender to undue importance or fussy local magnate.

**Panjim.** Older part of the Indo-Portuguese city of New Goa, capital of Goa (*q.v.*).

**Pankhurst.** Name of a family of English pioneers in the women's suffrage movement. Emmeline (1858-1928),

daughter of a calico-printer, Robert Goul- den, of Man- chester, was born July 14, 1858, and in 1879 married R. M. Pank- hurst (d. 1898), a barrister who drafted

the Married Women's Property Act of 1882, with whom she helped to found the Women's Franchise League in 1889. She joined the Independent Labour party in 1892, founded the Women's Social and Political Union in 1903, and was the leader of the militant "suffragettes" until the outbreak of the First Great War in 1914, when she transformed her organization into one of national service. Imprisoned some eight times for sensational activities—inciting to riot, window breaking, assault, and complicity in a bomb outrage on Lloyd George's



Emmeline Pankhurst,  
British women's leader  
*Elliott & Fry*

house—she remained un- deterred and continued to demonstrate and lecture in England and the U.S.A. In 1918 she joined the Conservative party. She



Christabel Pankhurst,  
British suffragist

died June 14, 1928. She wrote *My Own Story*, 1914. Her statue in Victoria Tower Gardens, West- minster, was unveiled 1930.



Sylvia Pankhurst,  
British propagandist

Her daughter Christabel (1880-1958) played a lead- ing part in the suffrage move- ment from 1905, editing *The Suffra- gette* and several times undergoing imprison- ment. After the granting of the vote to woman in 1918 she devoted herself to a religious movement and preached the immediate second coming of Christ. She was created D.B.E. in 1936.

Mrs. Pankhurst's second daughter Sylvia (Estelle) (b. 1882) was also associated with the suffrage move- ment, edited *The Workers' Dread- nought* in 1914, and joined a pacifist group. She was sentenced to six months' imprisonment in 1921 for publishing articles cal- culated to cause sedition. Chair- man of the international Ethiopian council for study and report, she did much propaganda on behalf of Abyssinian independence. She pub. *The Suffragette Movement*, 1931; a life of her mother, 1935.

**Panna.** Town of Madhya Union, India, in Bundelkhand, capital of a dist. of the same name. The town is 105 m. N. of Jubbulpore, and contains several modern Hindu temples. Formerly diamonds were mined in the locality. Area of dist. 2,789 sq. m. Pop. (1951) dist., 258,703; town (est.), 15,000.

Panna was the capital of the former princely state of Panna, area 2,580 sq. m., which entered the Vindhya Union (*q.v.*) in 1948.

**Panning.** Process of concen- trating heavy minerals used by prospectors, by miners working placer deposits on a small scale, and for the rough assaying of samples of certain ores. The method is based on the fact that some minerals have higher specific gravities than others and that some heavy ore minerals fre- quently occur associated with lighter, worthless minerals.

The pan is a circular dish with sloping sides. The average size is 15 ins. in diameter and 2½ ins. deep. The pan, often made of thin steel and sometimes wood, should be light and stiff, with a smooth inner surface.

The pan of gravel is placed in water and the contents thoroughly wetted and stirred by hand to

break up any lumps of clay; the larger stones are picked out. In the water it is given a shaking, circular motion, the lighter min- erals working their way to the surface and the heavier settling to the bottom. The lighter min- erals are washed off, the heaviest finally remain, and these may be examined for the presence of gold, cassiterite, wolfram, etc. The method is primitive and slow, but extensively used where labour is cheap and the use of machinery uneconomic. Variations are used in S. America, Malaya, India, and Nigeria.

**Pannonia.** A province of the Roman empire. It lay between the Alps and the Danube, from a point above the modern Vienna to Belgrade, and embraced a large part of the present Austria, Hun- gary, and Yugoslavia. Its people, who seem to have been of Illyrian race, were defeated, c. 30 B.C., by Vibius, one of the generals of Octavianus. They revolted A.D. 7 and were reconquered by Tiberius.

**Panorama** (Gr. *pan*, all; *horama*, sight). Term for a picture giving views of objects in all direc- tions. A panoramic display, which was in a sense the predecessor of the cinematograph, was a picture representing a number of scenes which passed in succession before the audience. See *Cinematography*.

**Panos.** Family of S. American Indian tribes of allied speech. Mostly in the Pampa del Sacra- mento, Peru, they are a branch of the Caras, once dominant in Ecuador. Their numbers have dwindled to insignificance.

**Pans.** In geology, hard layers formed by the consolidation of loose material at depth below the surface of the soil. They interfere with drainage and decrease fertil- ity. A pan simply consisting of hardened clay is known as a plough sole, and may be caused by contin- uous ploughing of heavy land. In lighter soils the pan is formed by infiltration of various substances in solution, these being deposited and acting like cement. A distinc- tion is thus made between moor- bed pan (organic cement), iron pan (ferric oxide), and limy pan (car- bonate of lime). Pans require breaking up by subsoiling or deep ploughing.

**Pan-Slavism.** Movement for the unification of all Slavonic na- tions under Russian leadership. The word appeared first in 1826 in a book by a Slovak, J. Herkel, but its cultural aspect had been out- lined in 1794 by a Pole named Staszyc, and elaborated by the



Czech poet Jan Kollar in some widely read sonnets. The movement was fostered by the anti-Western slavophiles in Russia, and exploited by tsarist politicians, mainly for the furthering of aims in the Balkans. Pan-Slavist congresses were held in Prague, 1848, and in Moscow, 1867. The severance of the Poles from the movement, after their revolt of 1863, changed its trend in the late 19th century into neo-slavism, a more liberal concept. In this form it held congresses at Prague, 1908, and Sofia, 1910. Deprived of its fundamental tenets by international Bolshevism, Pan-Slavism again became a live force under the impact of Nazi pan-Germanism, and played a part in Russian policy after the Second Great War.

**Pansy** (*Viola tricolor*). Perennial herb of the family *Violaceae*. It is a native of Europe, N. Africa, and N. and W. Asia. The leaves in general form are oblong, or lance-shaped, but variously



lobed and cut. The flowers are purple, whitish, or yellow, or a varied mixture of the three colours. The number of named varieties is enormous, and every year sees additions.

They do well in almost any garden soil, but the best results are obtained by planting deeply in a well-drained sandy loam, enriched with stable or cow manure. Special varieties can be propagated only by means of cuttings and divisions of the old plants, made at the end of Aug. or Sept., and given slight protection in winter. The word pansy is derived from the French *pensée*, thought. Alternative names are heartsease and love-in-idleness.

**Pantagruel**. Giant and king of the Dipsodes in Rabelais's *Life of Gargantua and the Heroic Deeds of Pantagruel*. He is the son of Gargantua, and his name is explained as signifying all-thirsty.

### Pantaloon

(Ital. *Pantaleone*, a saint popular in Venice). Ridiculous old Venetian bourgeois in the Italian comedy, or *Commedia dell'Arte* (*q.v.*). Sometimes he was an old bachelor, but generally he was married to an unfaithful young wife or was the father of troublesome young daughters. Columbine was often his daughter, and Harlequin sometimes his lackey. Lean and slippered, as Shakespeare called him, Pantaloon wore the skin-tight trousers all of one piece named after him, and a long gaberdine, originally red, but changed to black when Venice lost Negroponte and the whole city put on mourning. In traditional English pantomime he is a butt for the practical jokes of harlequin and clown. See Columbine; Harlequin; Pantomime.

**Pantellaria**. Volcanic island of the Mediterranean. Situated 60 m. S. of Sicily and 40 m. N. of Tunisia, it has an area of 32 sq. m., and forms part of the prov. of Trapani. A dependency of Sicily (*q.v.*), it has a similar history. There is an extinct crater, *Montagna Grande*, 2,740 ft. high; numerous fumaroles and hot springs exist; in 1891 a submarine eruption occurred 3 m. to the N.W. Raisins and figs are produced, and fishing is engaged in. Round towers, known as *Sesi*, betoken a prehistoric population.

Pantellaria was colonised by the Phoenicians and captured by Rome in 217 B.C. The Christian inhabitants were exterminated by the Arabs about 700.

Bombed from the air by the Allies, with scarcely a day's respite, from May 9, 1943, and frequently also bombarded from the sea, Pantellaria surrendered unconditionally June 11 without the necessity of an Allied landing.



Pantaloon, in English pantomime

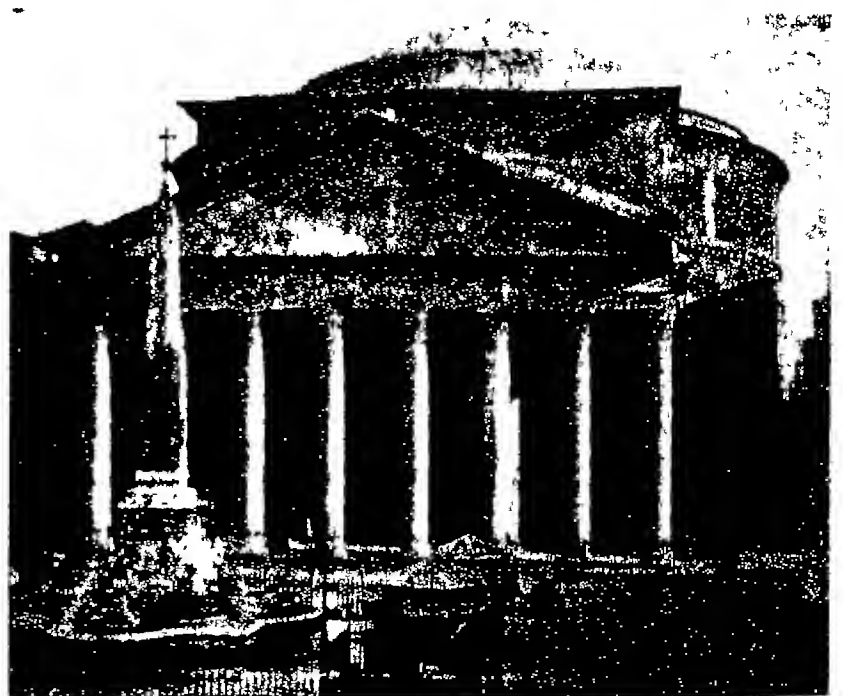
Under the peace treaty between the Allies and Italy, 1947, Pantellaria was to be demilitarised.

**Panthay**. Burmese name for Chinese Mahomedans, especially in Yunnan. Calling themselves Hui-hui, they are presumably descendants of medieval Tartar soldiery. Official oppression led in 1855 to a rebellion under Tu Wenhshiu, who was proclaimed sultan, 1867, but overthrown, 1873. Panthay muleteers serve the caravan trade between Burma and China.

**Pantheism** (Gr. *pan*, all; *theos*, god). The doctrine which affirms the unity of the Deity with the world. Pantheism has received different names according to its attitude towards the relation of individual things to the absolute. Acosmism denies the existence of a universe as distinct from God; emanationism explains all things as flowing out from the Deity, of whom they form part; Krause's panentheism teaches that all things are in God.

A fundamental part of much ancient Indian philosophy, pantheism appears in the Greek Eleatic and Neoplatonic systems, and in many Christian mystics from the so-called Dionysius the Areopagite onwards. It was taught by Bruno and other Italians of the Renaissance, and by many German Idealists. It is most completely developed in the philosophy of Spinoza. See God; Spinoza.

**Pantheon** (Gr. *pantheon*, belonging to all the gods). Temple in Rome, now a church. One of the most celebrated of ancient Roman buildings that still survive, built by Hadrian between A.D. 120-130 on the site of the earlier pantheon erected by Agrippa in 27 B.C. as a memorial to the house of Caesar, and burnt down A.D. 80. The main structural parts of the Pantheon consist of a rotunda and a dome: the interior of the dome



Pantheon. Roman temple built by Hadrian A.D. 120-130, now used as a church



Pansy. The two-coloured variety. Left, the common yellow pansy

is an almost perfect hemisphere its height being 142 ft., its diameter 139 ft. The portico of Corinthian columns supports a massive pediment; and behind the portico is another pediment which partly screens the dome. The dome, of solid concrete, is lighted by an opening in the summit 27 ft. in diameter. Originally the dome was covered with tiles of gilded bronze, removed by Constantius II in the 4th century A.D. A lead covering was substituted by Pope Gregory III. The interior is lined with marble. The original bronze doors, repaired in 1563, survive. In 608 the Pantheon was consecrated by Boniface IV, and dedicated to S. Mary of the Martyrs; it contains tombs of and monuments to eminent Italians.

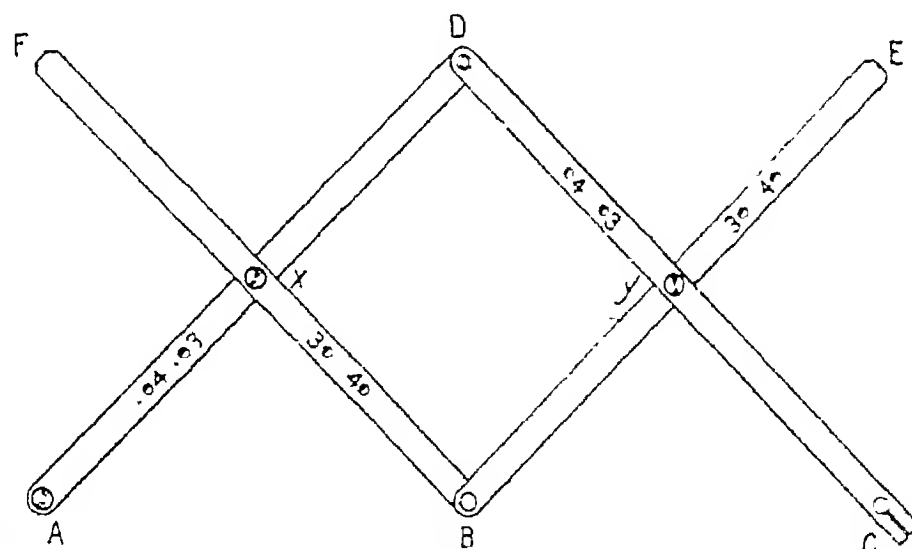
The Panthéon, Paris (*see* illustrating p. 6353), a Roman-style building designed by Soufflot and begun in 1764, has been three times a church dedicated to S. Geneviève, and three times a temple of honour to great Frenchmen, a number of whom are buried in the crypt.

**Panther** (*Felis pardus*). Large and ferocious spotted cat. It is a native of Africa, S. Asia, Java, and Japan, about 7 ft. in length. Its upper parts are yellow closely spotted with black, paling to white on the under surface. The spots vary in form from broken rings and ovals to short longitudinal bars and blotches. Generally known in India as the panther, in other parts of its distribution it is called leopard (*q.v.*).

**Pantin.** Town of France, in the dept. of Seine. An industrial suburb of Paris, it lies just outside the fortifications, 1 m. N.E. of the city. The Oureq canal runs past it, and the industries include rly. wagon factories, the making of chocolate, soap, preserves, and perfumery, distilleries, dyeworks, and some stone quarries. Although an old town, mentioned as Pentinium in the 11th century, Pantin has no points of outstanding interest. Pop. (1954) 36,963.

**Pantograph.** Instrument for copying designs on a larger or a reduced scale. Its principle is shown by the accompanying illustration. A D, D C and B F, B E are two pairs of rods of equal length, hinged together at D and B respectively, and attached by removable screws at *x* and *y*. The apparatus is secured to the board by a single spike at A, about which it can be moved freely in any direction. All four rods have a series of holes in them, and by set-

ting the screws in similarly-numbered holes the sides D *x*, B *y* of the parallelogram B *x* D *y* may be made equal to, longer than,



Pantograph for copying designs on different scales. See text

or shorter than the sides B *x*, D *y*. The longer D *x* is relatively to D *y*, the greater will be the movements of C relatively to those of B. If the reproduction is to be larger than the original, a pencil is inserted at C and a tracing stylus at B; if smaller, the positions are reversed.

**Pantomime.** Art of acting without words, by gestures and facial expression only. Though practised in ancient Greece, it became more popular in Rome, where it had the great advantage of supplying an entertainment intelligible to the cosmopolitan crowd that lived there. Facial expression, however, was excluded in those days because of the masks worn by the performers—contrivances of bark, leather, or metal, lined with cloth, which covered the entire head. In the 17th and 18th centuries the word pantomime was applied in France to a kind of mythological ballet which was in great favour in Paris and at Versailles. Nowadays the word is chiefly used for spectacular Christmas theatrical productions which first became popular in Great Britain during the 19th century and have developed unique traditions of their own. Originally they were a combination of familiar fairy story with ballet and harlequinade, introducing the stock characters of Harlequin, Columbine, Pantaloon, and Clown, and traditional "business" with sausages and red-hot poker. The fairy story element was gradually strengthened at the expense of the other two, the ballet becoming a special feature at the end of the first half, and the harlequinade concluding the whole performance. The harlequinade has now almost disappeared. For a time it was the vogue to combine two or more fairy stories with burlesque effect, as seen still in the tradition which

combines Robin Hood with the Babes in the Wood. The stories were never much more than a flimsy basis for a riot of song,

dance, and comic business, which became increasingly sophisticated and vulgarised. Certain features have become characteristic, *e.g.* the masquerading of a woman as "principal boy" and of a man as an elderly widow, or "dame"; the inclusion of fairy

and demon as supernatural protagonists; the grand parade finale with all the performers entering in ascending order of importance to receive their applause. Stock characters like Idle Jack (Dick Whittington), Dandini and Buttons (Cinderella), and Pekoe and Widow Twankey (Aladdin), owe their whole existence to pantomime. The names of the last two were taken from popular brands of China tea in mid-19th century, Twankey being Twan-kee. Drury Lane theatre was long famous for the elaborate nature of its Christmas pantomimes, as were certain theatres in the north of England and in Scotland, *e.g.* the Grand, Leeds, and the Prince's, Glasgow, where the productions often run well into the spring.

**Panzer** (Ger., coat of mail, iron-clad). Name given to the German armoured division in the Second Great War. The term Panzer division was first used by the Austrian Gen. Eimannsberg in his book Tank War, 1934, which became a German general staff textbook. Although its composition varied according to operational conditions, the division normally consisted of: two tank regiments of three battalions each, totalling 468 light, medium, and heavy tanks; three battalions of motorised infantry; a battalion of 50 armoured cars; a battery of 24 self-propelled guns; another of 24 A.A. guns; an anti-tank battery of 36 guns; two battalions of engineers; one of signals; 12 reconnaissance aircraft and 32 dive-bombers. The purpose of the Panzer division was to act as the spearhead of attack, its mobility enabling it to exploit any weakness in the enemy defence.

**Paoli**, PASQUALE (1725-1807). Corsican patriot. Born April 25, 1725, son of the Corsican leader, Giacinto Paoli, he was educated



at Naples, where his father commanded a regiment of Corsican exiles. In 1755 Pasquale was offered the supreme power in Corsica, where he consolidated the Corsicans by making vendettas unlawful, and provided a generous constitution.



Pasquale Paoli,  
Corsican patriot

When, in 1768, Corsica was ceded by Genoa to France, Paoli offered a fierce resistance, but he was compelled to leave the island with 350 followers on a British frigate, June 12, 1769. He settled in London, received a pension, and joined the circle of Dr. Johnson. By a vote of the National Assembly of France, Nov. 30, 1789, he was allowed to return to Corsica, which he again governed. He defied the French, and British troops were sent to his aid, in return for which he handed over the sovereignty of Corsica to George III. The British evacuated it in 1796. Paoli returned to London, 1795, and died there Feb. 5, 1807. See Corsica.

**Paolo and Francesca** (d. 1285). Lovers celebrated by Dante, who meets them in the second circle of Hell (*Inferno*, v). Giovanni Malatesta of Rimini, who was lame and ugly, received from the lord of Ravenna, as a reward for his military services, the hand of his beautiful daughter, Francesca (*q.v.*). She loved his brother Paolo, and was surprised with him by her husband, who slew them both. The story is the subject of a tragedy by Stephen Phillips, produced March 6, 1902, at the St. James's Theatre, London, where it ran for 136 performances. Henry Ainley played Paolo; George Alexander, Malatesta; Elizabeth Robins, Lucrezia; and Evelyn Millard, Francesca. See Francesca.

**Papa.** Latin form of the Greek *pappas* or *papas*, father. In origin and in ordinary usage the word is a child's name for father. It was an early title of bishops, e.g. S. Jerome refers to S. Cyprian as *Beatissimus papa*. Since the time of Gregory VII (1073-85) it has been claimed as the prescriptive title of the bishop of Rome. In the Greek Church the word denotes a priest. See Pope.

Titus destroyed Jerusalem, its prerogatives could not fail to be transferred elsewhere; and what city enjoyed an equal greatness with the world's capital, sanctified by the memories of Peter and Paul? Moreover, the unity of the empire demanded a universal religion which might absorb or supersede the many local gods, rites, and temples in East and West. From Egypt came the Isis worship, from Persia that of Mithras; both were tried by large numbers, only to be found wanting; and the field lay open to Christianity, which inherited the promises made to Judaism, while divesting them of its burdensome restrictions.

#### Identification with Rome

From S. Clement to S. Sylvester 90-313, the movement went forward, quickened by the "ten persecutions"; for, as Tertullian knew, "the blood of martyrs is the seed of the Church." At last Caesar made terms with Peter; the great Constantine saw victory in the Cross and wove it into his standard. Jupiter Capitolinus abdicated; the Vatican became, in S. Jerome's language, the "Roman height"; a fresh capital was set up on the shores of the Bosphorus; and the heirs of Augustan Rome quitted the Tiber, to which they never returned, A.D. 324. From now on, the papacy and the most sacred of world cities were identified in fact as in idea. Old Rome had civilized the West; it fell to the lot of a better dynasty to convert the barbarians, to make the future Christian, and to plant foundations on which European culture, instinct with principles taught in the Gospel, should prove itself to be the dominant power above mankind.

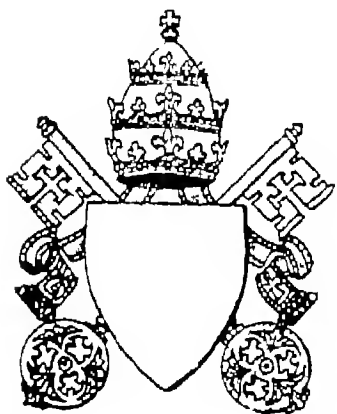
When the Iconoclast emperors lost their hold on Central Italy, the popes were acclaimed deliverers of Rome, and the temporal power, as it is called, began. "Their noblest title," wrote Gibbon, "is the free choice of a people whom they had redeemed from slavery." They could not yet rescue Spain from the Saracens; but on Christmas Day, 800, Leo III crowned Charlemagne in S. Peter's and created the Holy Roman Empire, of which a far-off shadow flitted away in the disappearance of its Austrian successor. The popes made the French monarchy; they converted Ireland, Britain, Central Europe, Poland, Bohemia, and Russia by their missionaries Patrick, Augustine, Boniface, Cyril, and Methodius; they resisted the Franconian and Hohenstaufen emperors, who would have made the Church a department of state; and

## THE PAPACY: HISTORICAL OUTLINE

Canon W. F. Barry, D.D., Author of *The Papal Monarchy*

*This article is supplemented by one on the Roman Catholic Church. See also the biographies of the Popes and the entries on the Councils; also Curia; Investiture; Pope; Rome; Vatican, etc.*

No dynasty of rulers or lawgivers left standing in Europe today is as old as the papacy; none, perhaps, in the world except that



Papacy, shield on which each pope emblazons his arms

of Japan. In legal documents issuing from his court the pope is termed bishop of Rome, successor of S. Peter, Pontifex Maximus and Vicar of Christ. He holds many more titles, but they all flow from one; for he is the Roman Father, emphatically such, and this Virgilian appellation (*Aeneid* ix, 449) prefigures an empire without end, visible in its throne of majesty, but something higher still, because the gift of Heaven. If S. Peter was prince of the Apostles, yet imperial Caesar was head of the college of Pontiffs, a priest who could offer sacrifice and edit or interpret the Sibylline books. This very ancient mingling of attributes in a priest-king was familiar to Jews and Christians, who venerated Melchizedek, king

of Salem, priest of the Most High God.

The Apostle Peter came to Rome, according to tradition, in A.D. 42, and in whatever year he suffered martyrdom, it is certain that his Confession became a place of pilgrimage from all parts of the empire, as Caius the priest bears witness at the beginning of the 3rd century. Reference to the good Apostles in S. Clement's epistle, about A.D. 94, and an implication of their heroic end, confirm the association of Peter and Paul with Roman Christianity; but succession to the bishopric is never derived from the teacher of the Gentiles. In the earliest catalogues of the popes a slight derangement leaves the chief links secure. There is no question among scholars of best repute that Peter died in Rome, where he had exercised supreme authority, and had designated Linus or Clement to succeed him as bishop.

#### Need for a Universal Religion

When Nero put to death an immense multitude of Christians in A.D. 64, the new and spiritual Rome, which was to rise upon the ruin of republic and empire, celebrated her birthday. When, again,

they became suzerains of every Western kingdom except France.

The holy war against Mahomedans revealed the same spirit armed for battle. If it began with the conquest of Jerusalem in 1099, it did not cease until 1720, under Clement XI; and it remains the great Christian epic. The genuine Middle Ages came to an end when the 14th century opened with a fatal dispute between Philip the Fair of France and Boniface VIII. No century has been more disastrous to the papacy, captive at Avignon for seventy years, rent by the Great Schism during another forty. The council of Constance (1414-17), which restored visible unity, voted by nations instead of by bishops; and our modern world stood at the door.

#### Renaissance and Reformation

In 1453 the Turks captured Constantinople. All that we understand by culture fled to the West, and Rome took to herself the glorious task of Athens. A brilliant era came in, with learning, luxury, scandals, catastrophe in its train—Luther's revolt and the sack of Rome. The whole North fell away. England struck out a line of her own; Scotland obeyed Knox, who obeyed Calvin. Then Ignatius of Loyola founded the Jesuits, and Rome got back one-half of what she had lost; but the Thirty Years War, ending in 1648, drew a line which has never been altered since. The last of the great popes were Julius II, Pius V, and Sixtus V.

The principle of nationality, which was to make Italy free and united, ruled throughout the 19th century. The pope's temporal power fell before it. On Sept. 20, 1870, the Porta Pia was blown open by Italian guns; a plebiscite followed, and Rome began to fill the part of a secular capital. The Vatican was left to S. Peter. Yet in Leo XIII a great pope became once more visible, who could compel Bismarck to kneel in spirit at Canossa. The Vatican council had brought together bishops from every region of the globe; and papal infallibility was proclaimed 63 days before Rome capitulated.

For hundreds of years the papacy had been overlord of Europe, controlling the two swords, spiritual and temporal. It is now the head of a world-wide voluntary association, which wields no sword but its faith, and which owes nothing to secular governments. The pope is guardian of a temple not made with hands; in this light, at least, three hundred millions of Catholics regard him. His effective influence,

at present, is more extensive than in any former age, being less hampered by secular considerations, and much more direct in action.

W. F. Barry, D.D.

From 1870 the popes maintained a dignified protest against the spoliation of their territory by remaining within the Vatican and its gardens for 59 years, and by refusing to accept the so-called law of guarantees. Gradually relations between the papacy and the Italian government improved and, to the astonishment of the world, which had regarded the "Roman question" as insoluble, on Feb. 11, 1929, the treaty of the Lateran was signed by the secretary of state, representing Pius XI, and Mussolini, representing the king. The pope gave up all but a minimum of territory, but was acknowledged as an independent sovereign. The limits of the pope's temporal jurisdiction are the Vatican city, including the palace and gardens, S. Peter's basilica and its square, the chief basilicas and certain other buildings in Rome, and Castel Gandolfo where popes sometimes go to escape intense heat in summer. The Vatican city covers 109 acres, has 1,025 inhabitants, and must be the smallest independent state in the world. In spite of some early disagreements the settlement has worked well.

H. W. Acomb

**Bibliography.** The Formation of Christendom, T. W. Allies, 1865-75; Catholic Church and Christian State, Cardinal Hergenrother, 1876; Latin Christianity, H. H. Milman, 1883; History of the Popes, L. v. Pastor, 1891-1941; History of the City of Rome, F. Gregorovius, Eng. trans. A. Hamilton, 1894-1902; History of the Papacy, M. Creighton, 1897; Ave Roma Immortalis, F. M. Crawford, 1898; Renaissance Types, W. S. Lilly, 1901; Lives of the Popes in the Early Middle Ages, H. K. Mann, 1902-32; The Holy Roman Empire, Lord Bryce, rev. ed. 1904; History of the Popes, L. v. Ranke, Eng. trans. E. Foster, 1908; The Papacy and Modern Times, W. F. Barry, 1911.

**Papain.** Vegetable ferment present in the milky juice of the unripe fruit of *Carica papaya* (papaw, *q.v.*). Papain occurs in commerce as a fine greyish powder with a characteristic odour and sweetish taste. It is a proteolytic enzyme intermediate in action between pepsin and trypsin, and has been given as a digestive.

**Papal States** OR STATES OF THE CHURCH. Name given to the Italian territories which were under the temporal sovereignty of the popes. Differing at different periods, they

generally formed a solid strip of territory running across Italy and bounded N.W. and N. by Tuscany, Modena, and the Po, and S.E. by the kingdom of Naples, the nucleus being the Roman patrimony of S. Peter and the exarchate of Ravenna, extorted from the Lombard kingdom by Pepin and given by him to Pope Stephen II in 755.

Through the Middle Ages the regions in which the pope was able to exercise temporal sovereignty varied greatly, reaching their maximum under Innocent III (1198-1216). The annexations of Ravenna, Ancona, Bologna, Ferrara, Perugia, etc., date from the 16th century. Submerged under Napoleon's ascendancy, the Papal States reappeared in 1814, and received a constitution in 1849. The formation of the kingdom of Italy in 1860 reduced them to the comarca of Rome, the legation of Velletri, and the delegations of Viterbo, Frosinone, and Civita Vecchia. These being absorbed in 1870, the popes thereafter remained as self-constituted prisoners in the Vatican, until the Lateran treaty between the Holy See and Italy, Feb. 11, 1929, recognized the pope as sovereign of a clearly defined territory, the Vatican city. See Papacy.

**Papal University.** Ecclesiastical educational institution in Rome. It consists of three colleges: the pontifical, founded by S. Ignatius Loyola in 1550; the biblical, founded in 1909; and the oriental, founded in 1917. The three colleges, called collectively the Pontifical Gregorian university, are under the direction of the society of Jesus; they prepare candidates for the priesthood. The buildings are outside the Vatican city, but since the concordat with Italy of 1929 have enjoyed extra-territorial rights in relation to the Holy See.

**Papaveraceae.** Name given to the poppy family. It forms a family of herbs and a few small shrubs with milky or coloured juice, chiefly natives of the N. temperate regions. They have alternate leaves on their stalks. There are only two sepals, which are thrown off when the four crumpled, silky petals expand. The seed capsule either is like the familiar poppy head of the druggists' shops, opening when ripe by pores just beneath the broad-lobed stigma to release the innumerable small seeds, or is a long, slender, cylinder opening by a long valve on each side. *Papaver somniferum* yields opium from its milky juice;



its seeds, which are not narcotic, are the maw-seed of the bird-fancier. See Opium; Poppy.

**Papaw** (*Carica papaya*). Small evergreen tree of the family Caricaceae. A native of S. America, it



Papaw tree laden with fruit

has large, alternate, seven-lobed leaves, the segments themselves being deeply lobed. The greenish flowers are either male or female, and the two kinds are often on separate trees. The dingy, orange-coloured fruit is an elongated oval nearly a foot long, with fleshy gourd-like rind enclosing

five rows of small black seeds. It is eaten after being boiled or pickled. It yields the proteid-ferment papain.

**Papeete.** Capital and seaport of the Society Islands. Situated on the N.W. coast of Tahiti, it contains the residence of the French governor. Pop. (1951 est.) 15,200.

**Papen, Franz von** (b. 1879). German politician. Of a family belonging to the R.C. aristocracy, he was born at Werl, Westphalia, Oct. 29, 1879. At the outbreak of the First Great War he was military attaché in Mexico; being transferred to Washington



Franz von Papen, German politician

he became an active German agent, organizing plots to impede the output of munitions for the Allies; but after losing incriminating documents he was sent home. A member of the centre in the Prussian diet, 1921-28, he became German chancellor in June, 1932, but after the Nazis had obtained 230 out of 608 seats he resigned on Nov. 17.

Papen helped the Nazis to power in the belief that he could direct them as vice-chancellor, and narrowly escaped Hitler's purge in 1934. Ambassador to Vienna, in 1938 he helped to bring about Schuschnigg's downfall, and during the Second Great War as ambassador to Ankara he furthered German designs in the Balkans. After his country's defeat he was brought to trial before the Allied court at Nuremberg as a war criminal and acquitted. Immedi-

ately arrested by the Germans, he was in 1947 sentenced to eight years in a labour camp. Released 1949, he was still debarred from public activity. An Eng. trans. of his Memoirs appeared 1952.

**Paper.** Material on which records are kept by means of symbols made with ink. Man first recorded his thoughts and actions by carving hieroglyphics in rock and stone, then he used metal slabs, waxed boards, clay tablets, cured reptile and animal skins, papyrus and parchment, the last two direct forerunners of paper. (See Papyri.) Parchment, made from sheep and goat skin, came into vogue when the export of Egyptian papyrus was prohibited. It was very popular in the Middle Ages and has continued in use for important legal documents.

**HISTORY.** Paper (a word derived from papyrus) is a deposit of vegetable fibre prepared from an aqueous suspension. It was first produced, from bark, tow, and old linen, by Ts'ai-Lun, a Chinese minister, in A.D. 105. The process was kept secret for hundreds of years until some Chinese paper-makers were captured in 751 by Moors and Arabs and forced to divulge their knowledge. Linen formed the basic raw material in Bagdad paper mills, and as early as 1035 Arab merchants were wrapping their wares in paper. In the 12th century the art of papermaking reached Spain, coming a little later to Italy, France, and the Netherlands.

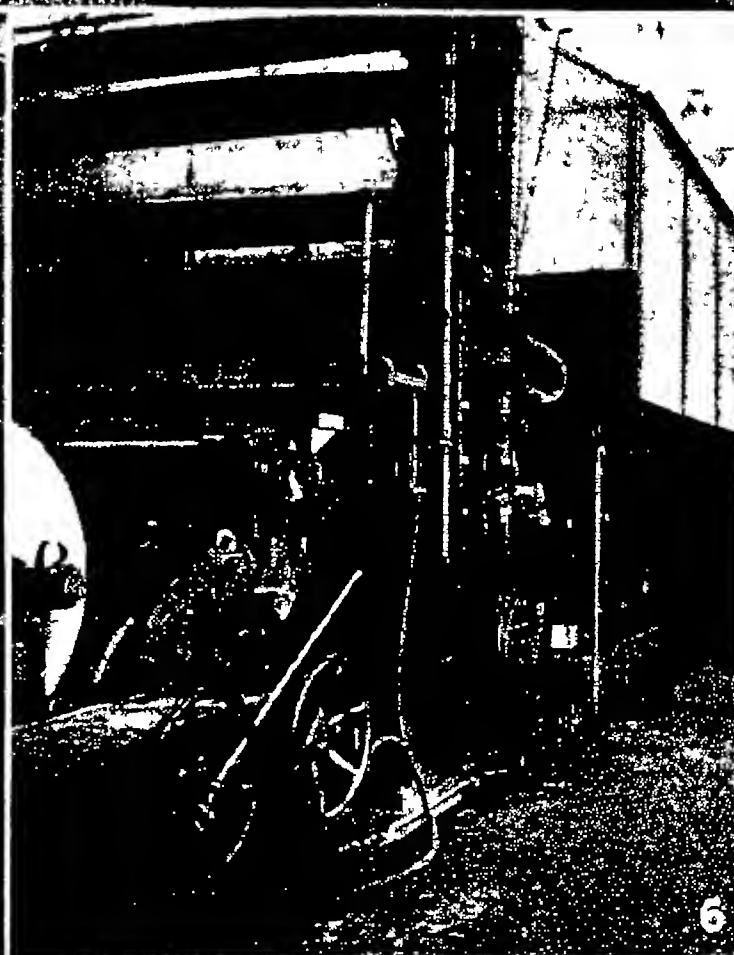
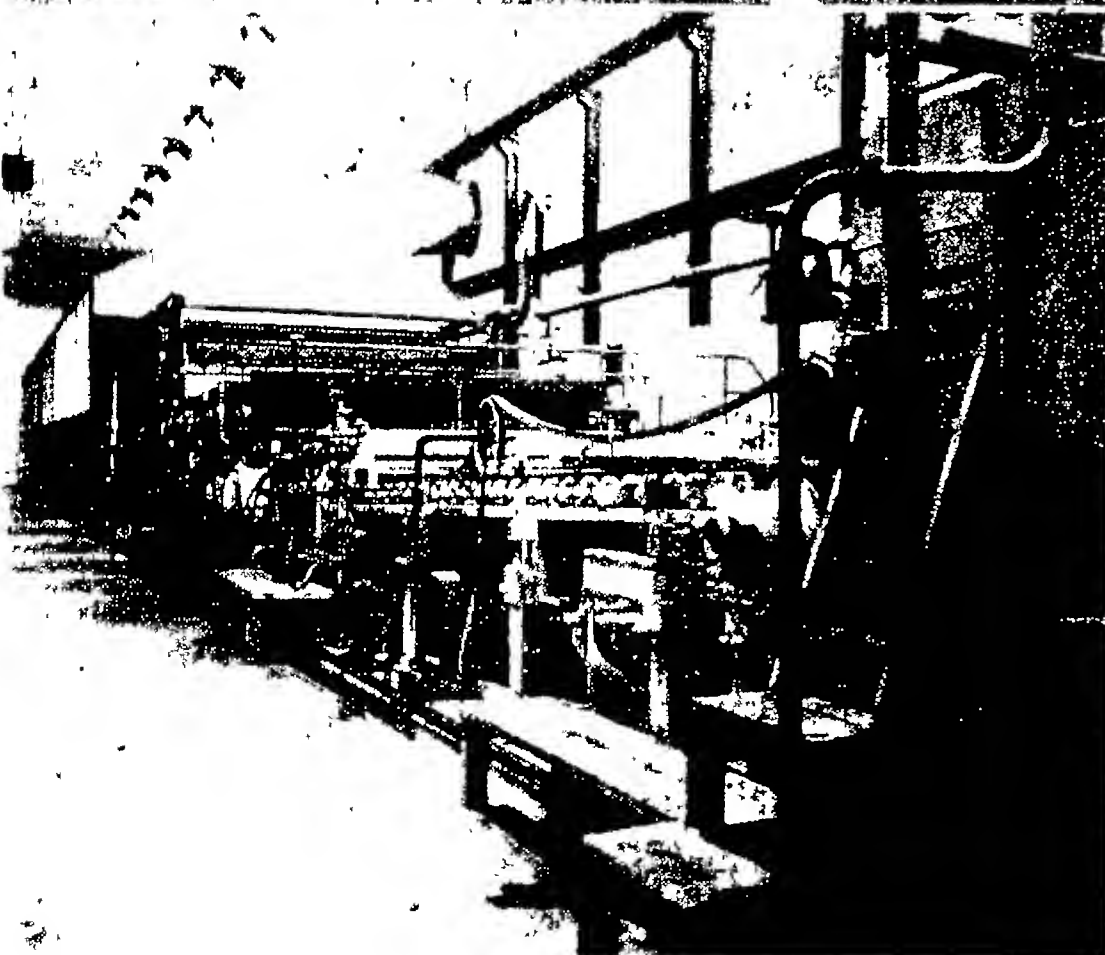
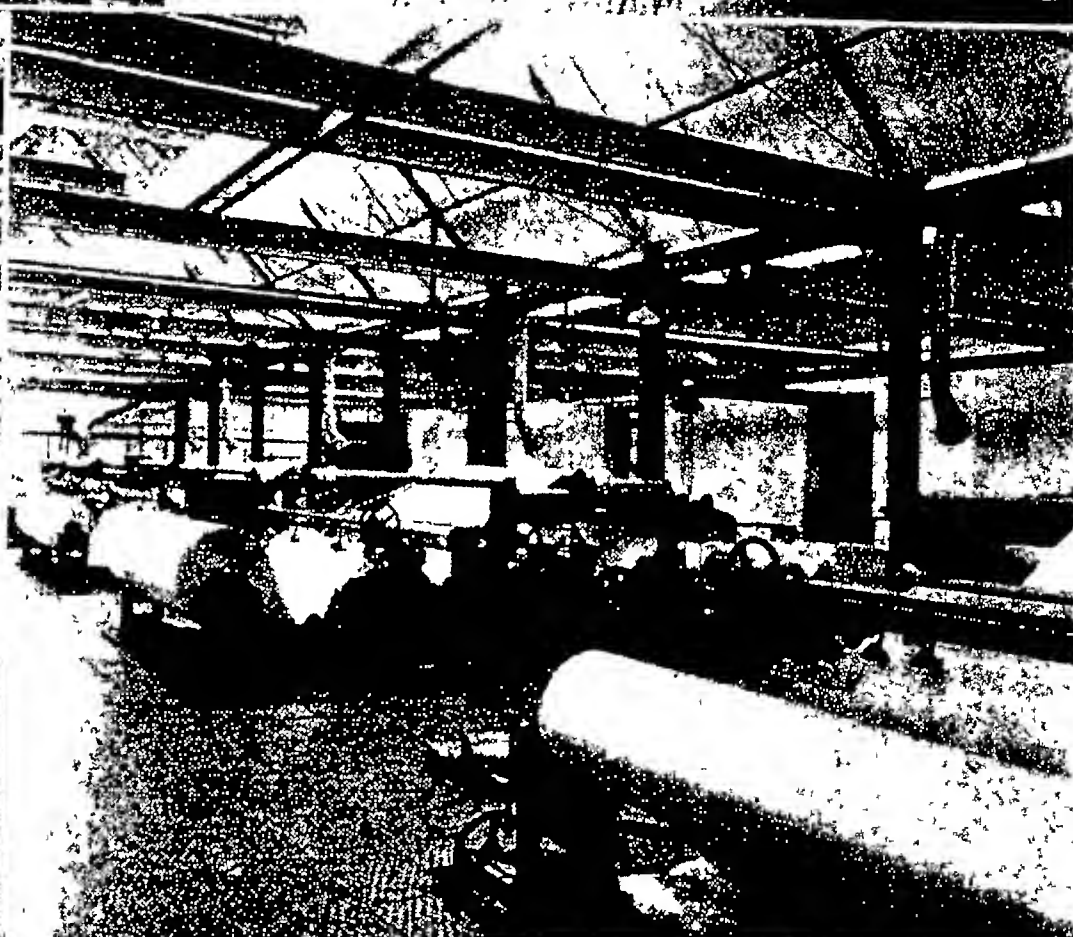
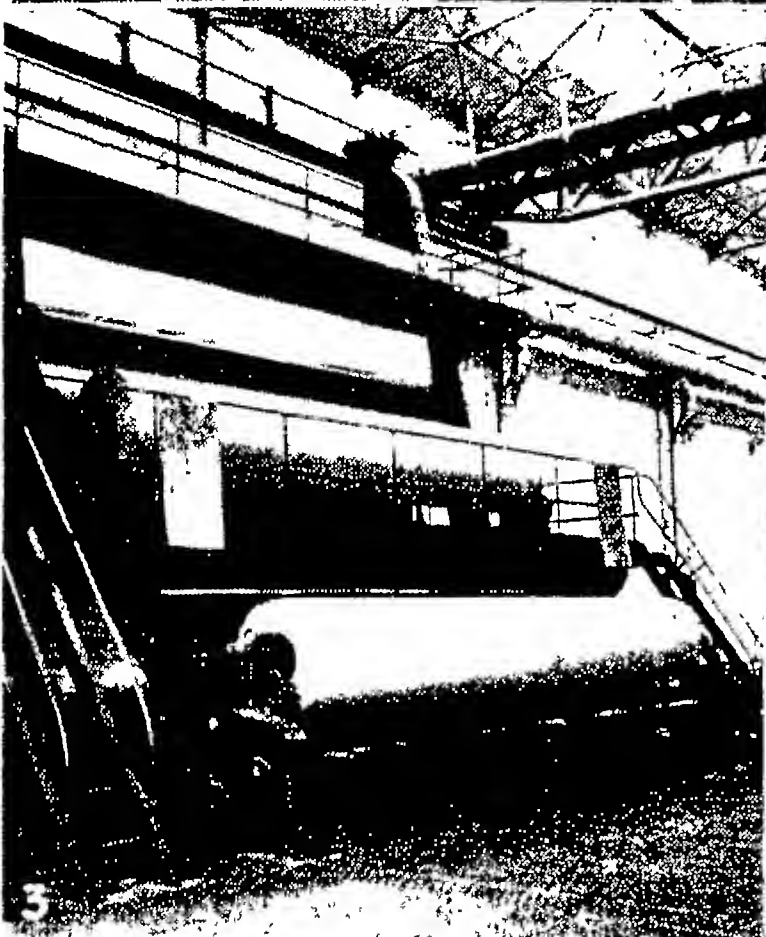
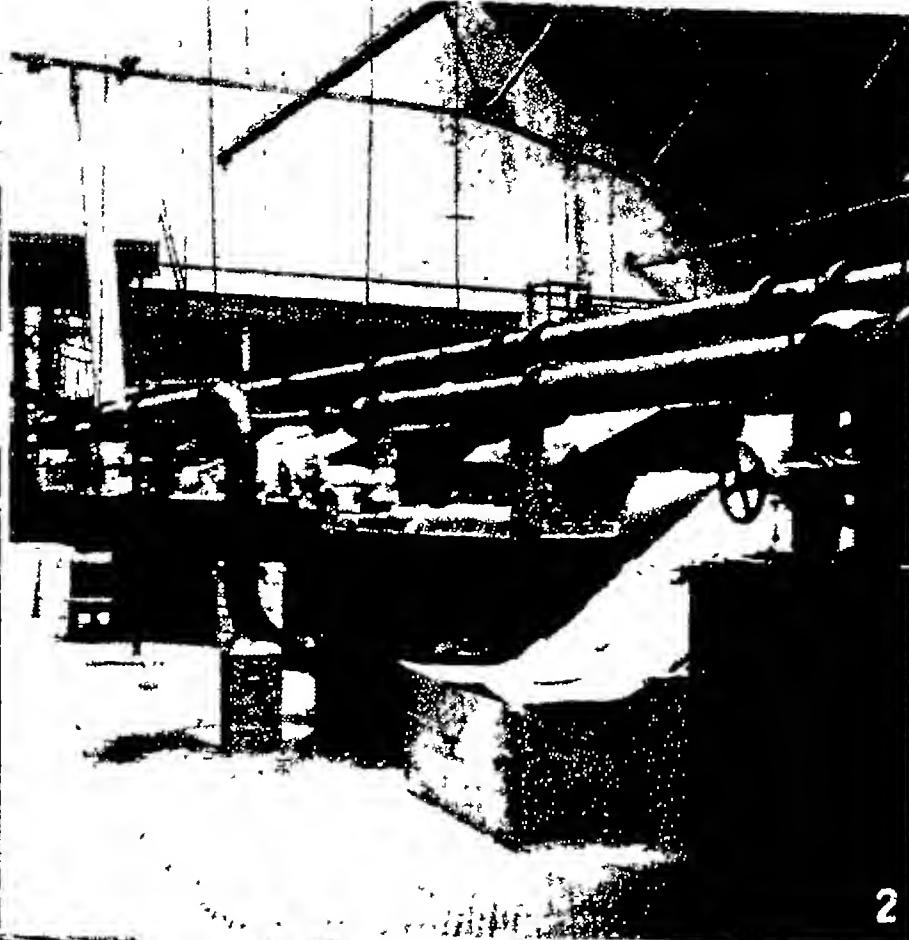
After a mill was started in Hainault (Flanders) in 1189, the industry rapidly spread throughout the Continent. The first English mill was opened in 1496 by John Tate at Hertford. Cotton and linen rags were moistened, and after fermentation and washing were "beaten" to pulp in stamping machines, rather like mechanical pestles and mortars. After Tate's time, papermaking fell into comparative desuetude in England until de Portal took up his monopoly of making paper at Laverstoke for Bank of England notes in 1725; the famous Whatman mills were founded in 1740. In the meantime, the industry had been making great strides in the Netherlands, where the Hollander beating engine, invented in 1680, was followed by Louis Robert's invention of the paper machine at Essonnes in 1798. A few years later the Fourdrinier brothers, of London, financed Bryan Donkin's first paper machine at Two Waters Mill, Hertford, in 1803. John

Dickinson invented the cylinder vat machine in 1809, drying cylinders were added to the Fourdrinier machine in 1821, suction pumps and the dandy roll followed, and by 1831 the prototype of the machine of the 20th century appeared.

The discovery of the bleaching action of chlorine by Berthollet and the cheapening of soda manufacture by Leblanc at the turn of the 18th century made it possible to prepare cellulose pulp cheaply from a wide range of fibrous materials. Koops used straw pulp in 1800. Routledge used esparto in 1852 and bamboo in 1875, and about 1855 in the U.S.A. brown wrapping paper was made from the linen shrouds taken from shiploads of Egyptian mummies. From his observation of the fibrous construction of wasps' nests, Réaumur concluded that paper could be manufactured from wood, and in 1840 Keller first introduced ground wood pulp. This, with Tilghman's invention of the sulphite wood-pulp process in 1866, made possible the production of the huge quantities of newsprint consumed by the press of the world.

**MANUFACTURE.** Cotton and linen rags, which yield virtually pure cellulose, are still extensively used for paper making; they yield high grade handmade and machine-made papers of great durability. Esparto grass, straw, bamboo, hemp, jute, and waste paper are all valuable sources of fibre, and much of the paper in everyday use is made of wood fibre from the coniferous forests of Scandinavia and N. America. Deciduous or hard woods such as poplar and birch have been used, and the search for new sources of fibre goes on continuously.

In making handmade paper cotton and linen rags and new white cuttings from the textile mills are sorted carefully, cut and dusted, and then digested with alkali under pressure. Partial disintegration in a breaking machine is followed by washing and bleaching to reach the "half-stuff" stage. The half-stuff is reduced by the beater to ultimate fibres, the individual fibres being separated, fibrillated, and shortened. The manner and duration of beating govern the properties of the finished stock. The beater is a heavy roll fitted with steel or bronze knives or bars. The roll is housed in an oblong trough with rounded ends and rotates with a peripheral speed of about 2,000 ft. per min. over a bedplate, which is fitted with bars. The



1. Stacks of wood pulp in bales waiting to be turned into paper. 2. Beaters, in which the wood pulp is treated before passing to the paper-making machines. 3. A super-calender which imparts a smooth surface.

4. Reclers on which the paper is slit to the size required 5. "Wet-end" of a paper machine on which the paper is formed. 6. "Dry-end" of a paper machine where paper is reeled for the super-calenders

### PAPER: STAGES IN THE PROCESS OF NEWSPRINT MANUFACTURE

*By courtesy of the Imperial Paper Mills, Ltd., Gravesend*



pulp circulates round the trough, past a central partition (the mid-feather), and then under the roll, the clearance between the beater bars and the bedplate being very small but adjustable to give the required degree of beating to the fibres. This treatment, which may take from one to 16 hrs., develops the strength of the pulp and alters its drainage characteristics; it needs to be carefully controlled to suit the specific type of paper being made.

After screening, the diluted paper pulp is run into a vat into which the vatman dips a shallow wire gauze sieve, called a hand mould. He withdraws a definite amount of stuff and shakes the mould in such a way as to cause the individual fibres to interlock as the water drains away. The mould is handed to the coucher who inverts it and deposits the sheet skilfully on to a wet woollen felt. The eventual pile of paper and felt is then pressed in a hydraulic press for 12–24 hrs. at  $1\frac{1}{2}$  tons per sq. in. to remove excess moisture. The sheets are then hung over cow-hair ropes (to prevent staining) to become air-dry, dipped into gelatine size solution, and again air dried. The final operation is plate-glazing, the sheets being placed singly between polished copper or zinc plates and passed to and fro between heavy calender rolls.

Handmade papers are nowadays usually reserved for special library editions of books, for high grade stationery, and as artists' material.

For the mass production of paper various materials cheaper than rags, *e.g.* wood, straw, esparto, are used. They are much less pure forms of cellulose than rag and all need special chemical treatment to eliminate lignin (*q.v.*), etc. Most chemical wood pulp is prepared by the sulphite process, in which small chips of wood are cooked under pressure with calcium bisulphite solution containing some free sulphur dioxide in solution. The product is very useful for most types of paper, including printing and writing grades. The "Kraft" process, based on digestion with caustic soda and sodium sulphide, yields a strong brownish pulp suitable for wrapping and paper sacks; after bleaching, it can also be used for most purposes for which bleached sulphite pulp is used, but with the advantage of greater fibre length. The soda process involves cooking with caustic soda and yields soft, easily bleached pulps.

Wood can, however, be used without chemical treatment. Barked logs are pressed against revolving grindstones under a flow of water which serves to cool the stone and carry the groundwood away to the screening machines. It then emerges as a fine, uniform pulp of good colour and brightness, suitable for newsprint manufacture. About 15 p.c. of the comparatively long-fibred sulphite pulp is added to improve the strength of the resulting sheet. Enormous newsprint machines, up to 300 ins. in width, and working at speeds up to 1,500 ft. per min., produce a paper able to stand the strain of printing by high-speed rotary newspaper presses. Wood pulp is generally made where wood and water power are readily available, as in Scandinavia and N. America, and is frequently converted immediately into paper, being pumped directly to the paper machines in the form of an aqueous suspension or "slush." Alternatively both chemical and groundwood pulp are made into sheets and baled for shipment to paper mills. Groundwood is usually shipped in bulk 40–50 p.c. wet, whilst chemical pulp is normally exported air-dry.

#### Process of Manufacture

On arrival at the newsprint mill, the pulp needs only the barest minimum of beating, mixed with water at a concentration of six p.c. After the addition of china clay slurry and a trace of dye, the stock passes through the refiners which break down oversize bundles of fibre and generally help to prepare a uniform suspension having the required drainage properties. The refined stock is diluted to 0.5–1.0 p.c. concentration and pumped to the strainers. From there it flows into a breast box where the necessary head and special streamlined construction make the stock pass smoothly under a slice on to the wire of the Fourdrinier paper machine. The wire is an endless wire gauze with about 55 meshes to the inch, drawn level between the breast roll at one end and the couch roll at the other. At intermediate positions it is supported by table rolls and suction boxes. As the thin mixture of pulp and water travels along with the wire, the fibres part with their water by drainage and by extraction at the suction boxes. After the wire, carrying the stock with it, has passed over the suction couch roll, the moisture content of the very wet immature sheet has dropped to 80 p.c. From

the couch, the paper is drawn forward, unsupported for the first time, to the woollen "wet felts" which convey the web through presses. The press rolls, of which there may be two or three pairs, smooth the web and reduce the moisture content to about 65 p.c. The web then passes to steam-heated drying cylinders, against which it is pressed by cotton "dry felts"; it arrives at the other end containing about eight p.c. moisture. Still in continuous production, the paper passes direct from the dryers to the machine calender, where a certain amount of gloss is given to it. After this the paper is put on reels, and the reels are afterwards transferred to a supercalender. This is a stack of alternate paper and steel rolls, which by friction and pressure produce a high gloss on the web. Finally, the wide reels are slit on the reeler by rotary knives to provide sizes suitable for newspaper printing.

The pulp for paper other than newsprint requires beating to some degree, and when necessary rosin soap and alum are added to the stock as sizing agents, together with loading materials, dyes, and pigments. The machines are slower than newsprint machines and range from about 80 to 150 ins. in width. The wire part is shaken by mechanical means to assist the felting of the fibres. The watermark is applied by means of a dandy roll, a rotating wire gauze cylinder with a wire design raised on it, placed just before the point at which the full vacuum of the suction boxes comes into play. The web becomes thinner where the design presses on it and the paper is consequently more transparent in that place.

The very thin, tough, and opaque paper called "Bible paper," the best-known of which is the Oxford India paper, is made from linen rags to which starch or minerals are added to give opacity. The strong, translucent "parchment paper," used to protect the corks of bottles containing medicinal, toilet, and other preparations, is made by dipping ordinary unsized paper into sulphuric acid, which is then quickly washed out. "Waxed paper" is made by passing the web of paper through a machine that coats it with molten paraffin. Genuine rice paper is made from rice straw; but most of the so-called rice papers are neither paper nor are they made from rice, being natural tissues derived from the pith of a small

Formosan tree. The genuine rice paper has its greatest application in rolling cigarettes, while the substitute is used to make sun hats and artificial flowers.

During the Second Great War an acute paper shortage developed in the U.K. because no esparto was imported; the manufacture and distribution of paper was subject to rigid control and a campaign conducted for the salvage of waste paper. Despite this shortage, the non-printing applications of paper were greatly extended. Millions of shell containers were made from low-grade waste-paper mixed with "Kraft" pulp, and an enormous variety of rations, munitions, and machine parts and instruments were sent to military theatres in all climates packed in paper containers resistant to water, weather, and climatic conditions.

Commercial paper products include packages for milk, cereals, and dehydrated foods, and sacks for cement and chemicals; twisted, braided, and woven papers for textiles and the cable industry; and thin paper for radio, radar, and television capacitors (condensers). Paper is also used for surgical dressings, curtains, draperies, and clothing.

**Bibliography.** Chemistry of Pulp and Paper Making, E. Sutermeister, 3rd ed., 1941; Modern Pulp and Paper Making, G. S. Witham, 2nd ed., 1942; A Laboratory Handbook of Pulp and Paper Manufacture, J. Grant, 1942; Modern Paper Making, R. H. Clapperton and W. Henderson, 2nd ed., 1947.

**Paper, SIZES OF.** Term for the dimensions of printing, writing, drawing, and brown papers. Of British printing paper there are 14 sizes, ranging from foolscap, 17 ins. by 13½ ins., to double post, 32 ins. by 40 ins.; of writing and drawing papers, 17 sizes, varying from pott, 15 ins. by 12½ ins., to emperor, 72 ins. by 48 ins.; and of brown papers, eight sizes, from Kent cap, 21 ins. by 18 ins., to casing, 46 ins. by 36 ins.

**Paper Money.** Slips of paper which are legal tender. Cheques, bills of exchange, etc., though forms of money, are not legal tender. In most modern states paper money forms the major constituent of the currency, metallic money—coins—being used only for units of small denomination. In the U.S.A., Canada, and many European countries notes are used for sums even lower than the largest British coin (the five-shilling piece).

In Scotland and N. Ireland the notes of trading banks con-

stitute an important part of the paper money, while in the U.S.A. notes are issued by commercial banks and the Federal Reserve banking system as well as by the Treasury. In Canada, Australia, and New Zealand commercial bank notes were formerly common. Usually, however, notes are issued by the state, or, more usually, by the central bank on behalf of the state. English bank notes are issued by the Bank of England, a state-owned institution since 1946. The former treasury notes were taken over by the Bank of

NOMINAL VALUE OF SELECTED NOTE ISSUES

	1939	1946
Bank of England	£563 m.	£1,400,248 m.
Bank of Australia	£A48 m.	£A198 m.
Bank of New Zealand	£NZ16 m.	£NZ46 m.
Bank of France	Fcs. 130,000 m.	Fcs. 680,517 m.
U.S. Federal Reserve Banks	\$4,609 m.	\$24,552 m.
Swiss National Bank	Fcs. 1,724 m.	Fcs. 3,722 m.
Reserve Bank of India	Rs. 1,700 m.	Rs. 12,000 m.
Netherlands Bank	Fls. 1,133 m.	Fls. 2,810 m.
Bank of Belgium	Fcs. 23,910 m.	Fcs. 71,440 m.

England, although then a private institution, in 1928.

The use of paper for money was common in China more than 1,000 years ago. In the U.K. it arose early in the 17th century and then consisted of the notes—or receipts—given by the goldsmiths for coin deposited with them for greater safety, these receipts eventually passing from hand to hand as money. The first Bank of England notes, for £20, came into circulation in 1695; by 1844 notes issued by 279 other banks were in circulation. The Bank Charter Act of that year so restricted the right of note issue that by 1921 that of the last remaining issuing bank, apart from the Bank of England, lapsed on the bank's amalgamation with Lloyds Bank Ltd. From 1829 until the issue of treasury notes (called "Bradburys" from the fact that they bore the signature of Sir John Bradbury, then secretary to the Treasury) in 1914, notes of less than £5 were prohibited. They were then issued for 10s., £1, £5, £10, £20, £50, £100, £200, £500, and £1000; notes of denominations larger than £5 were withdrawn and ceased to be legal tender on April 30, 1945, as a precaution against tax evasion.

Notes have almost entirely superseded gold coins internally. Externally, however, they have the disadvantage that, unlike gold, they have no guaranteed value abroad. Over-issue of notes was

once thought to constitute a major cause of inflation, and as a safeguard only notes which were fully convertible into gold on demand were considered safe; but experience has proved that inflation arises from a variety of causes of which the over-issue of paper currency is only one. The linking of the note issue to gold has been shewn to be harmful owing to the extent to which it makes the internal economy of a country subject to external conditions (gold having to be imported by most countries). The last attempt made by the U.K. to do so, in 1925, was abandoned in 1931.

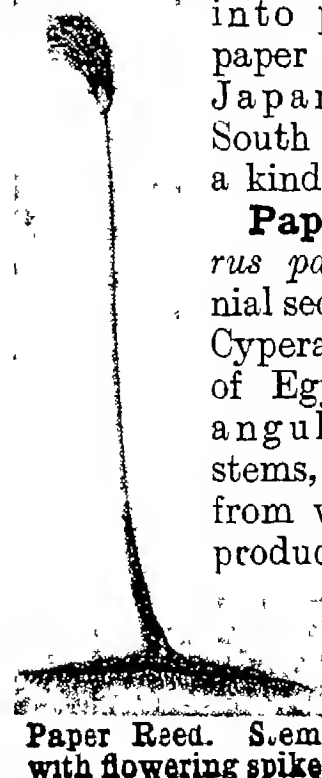
The extent to which notes are used as money appears from the table showing the nominal value of the note issue in certain countries in 1939 and 1946.

See Bank Note; Currency; Legal Tender; Money.

**Paper Mulberry** (*Broussonetia papyrifera*). A small tree of the family Moraceae. A native of China, it has hairy egg-shaped leaves. The greenish flowers have the sexes distinct on separate trees, the males in catkin-like clusters, the females in a round head. The latter are succeeded by scarlet fruits much like a mulberry in shape, but without flavour. The inner bark is beaten into pulp to make paper in China and Japan, and in the South Sea Islands into a kind of cloth.

Paper Mulberry. Leaves and flower clusters

**Paper Reed** (*Cyperus papyrus*). Perennial sedge of the family Cyperaceae. A native of Egypt, it has triangular flowering stems, 3-12 ft. high, from whose summit is produced the spike of flowers ringed by whorls of bracts. See Egypt; Paper; Papyrus.



Paper Reed. Stem with flowering spike



**Paphlagonia.** Ancient country of Asia Minor, on the Black Sea. It lay between Pontus on the E. and Bithynia on the W. It was mountainous, and its capital was Gangra. After having been part of the kingdom of Croesus, it passed under the rule of the Persian kings. Greeks made settlements on the coast. The eastern portion next became part of the domains of the king of Pontus, and remained so until the power of Mithradates was destroyed by the Romans, who included it in Bithynia.

**Paphos.** Ancient town of Cyprus, near the S.W. coast. It lies about a mile from the sea and, originally a Phoenician colony, was famous for its worship of Aphrodite, who was said to have landed here after her birth from the sea foam. Remains of the celebrated temple erected in her honour still exist. The town was badly damaged by earthquake in 1953.

**Papilloma.** Tumour more or less elongated in shape. Warts and polypi are common forms.

**Papillon** OR BUTTERFLY DOG. It is so-called from the shape and carriage of the ears, which resemble open butterfly wings. The papillon is probably a descendant of the dwarf spaniel of the Middle Ages; it was first imported into England from the Continent about 1922. It is a graceful toy dog with a small head, fine pointed muzzle, round eyes, and large, heavily fringed ears obliquely set on the



**Papillon.** A champion of the breed

head. The body is rather long, and the tail long, fringed, and carried over the back. The coat is long, fine, and silky, flat on back and sides and short on skull and face, the chest, tail, and legs are profusely covered with long hair. Colour: white with black or coloured patches; tricolour (black and white with tan spots on cheeks, above eyes, and under tail). Head marking should be symmetrical, with a white blaze up the face. Ideal weight, 3-6 lb., no standard of height.

**Papin, DENIS** (1647-? 1714). French physicist. Born Aug. 22, 1647, at Blois, he became assistant to Huygens in Paris in his experi-

ments with the air pump. Papin visited England, became a member of the Royal Society, and in 1690 constructed the first steam engine with a piston, applying his invention to a paddle boat. He invented the safety valve, and showed that boiling points of liquids depend upon the pressures to which they are subjected. Neither date nor place of his death is known.

**Papineau, LOUIS JOSEPH** (1786-1871). Canadian politician and rebel. Born at Montreal, Oct. 7, 1786, and educated at Quebec, he was elected to the legislative assembly of Lower Canada in 1814, and in 1815 was chosen Speaker. In 1820 he was made a member of the executive council, on which he sat for three years. A leader of the French Canadians, he was prominent in desiring drastic changes in the methods of government, and in opposing the suggested union of the two Canadas. Embittered by failure to carry his reforms, he led a rebellion in 1837. This failed and Papineau, declared a rebel, fled to the U.S.A. He lived in Paris 1839-44, then returned to Canada under the amnesty of 1844. He re-entered politics and was elected to the legislative assembly of Canada in 1848, but never regained his old influence, and in 1854 retired into private life. He died at Montebello, his manor house on the r. Ottawa, Sept. 23, 1871.

**Pappenheim, GOTTFRIED HEINRICH, COUNT VON** (1594-1632). Bavarian soldier. He was born at Pappenheim, May 29, 1594. He fought under Sigismund against the Poles, and joined the Catholic League, 1620. He was one of the chief imperial leaders of the Thirty Years' War (*q.v.*). After Tilly's death he served with Wallenstein, and, falling wounded at the battle of Lützen, died the next day at Leipzig, Nov. 17, 1632.

**Paps of Jura.** Mountain peaks of the island of Jura, Argyllshire, Scotland. They form the S. extremity of a bleak and rugged range, and consist of three conical summits rising above a deer forest. Beinn-an-Oir (mountain of gold) reaches 2,571 ft.; Beinn Siantaidh (hallowed mountain), 2,477 ft.; and Beinn-a-Chaolais (mountain of the firth), 2,407 ft.

**Papua.** See under New Guinea.



**Papuan.** Native couple, the woman in mourning weeds

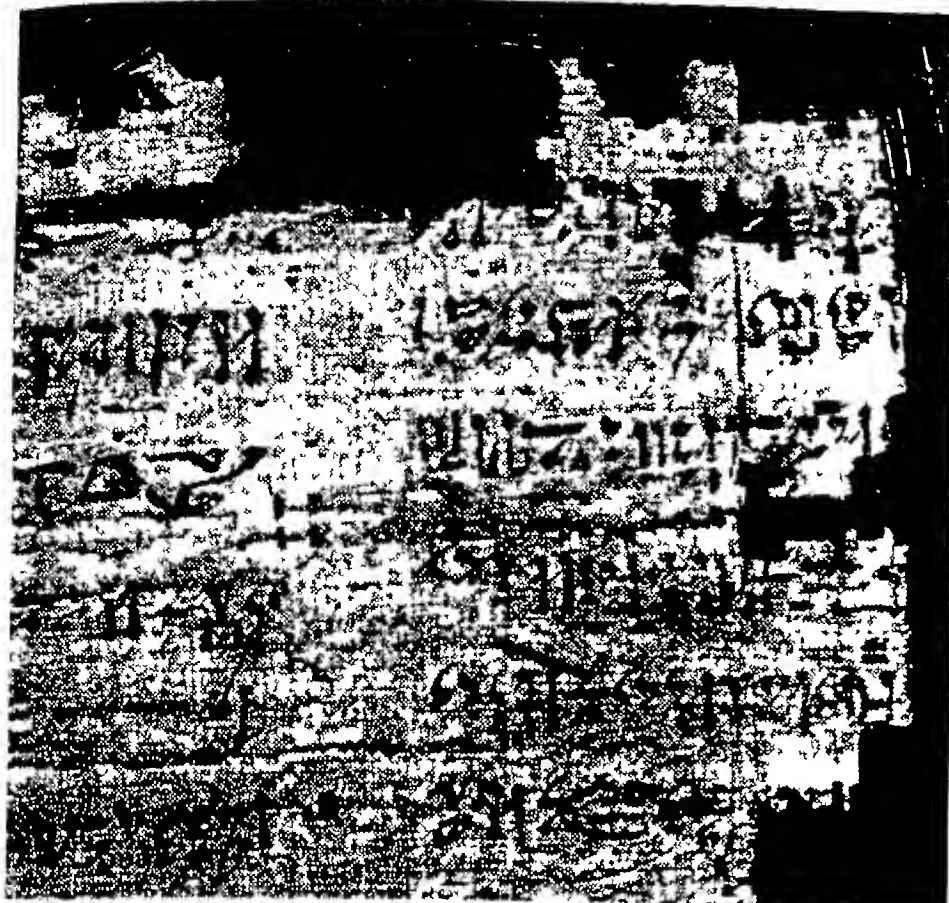
**Papua, GULF OF.** Large bay on the S. coast of the island of New Guinea. It receives the waters of the Fly and other rivers of Papua.

**Papuan** (Malay mop-headed). Term denoting aboriginal peoples characteristically of New Guinea; also in adjacent islands. They are a tall, brownish-black, long-headed group, with receding forehead, prominent brow,

ridges, broad nose, frizzy hair—often dressed mop-wise. There are considerable local variations on culture. Yams, taro, sweet potatoes are the staple crops in some areas, sago in others; forest products supplement the food supply, animals being hunted with dogs; fishing is important on the coast. Some are notable boat builders. Houses are often built on piles, and some of their great communal houses are 700 ft. long. While ignorant of iron, they developed their craftsmanship by the use of stone axes and chisels. Their weapons were stone-headed clubs, and bonetipped arrows shot from short bows.

**Papworth Village Settlement.** Community near Cambridge, England, founded in 1917 by (Sir) Pendrill Varrier-Jones, to help persons suffering from tuberculosis. It grew from one cottage to a village housing 1,500, grouped about a hospital and a sanatorium, where patients are helped to recovery and ex-patients settle with their families. Most of the inhabitants would be unemployable outside the settlement, and costs are partly met by public contributions. See also Enham.

**Papyri.** Ancient documents written upon rolls or sheets made from the papyrus rush, *Cyperus papyrus*, once harvested in the Nile delta, now found only about the upper Nile. Moistened strips of stem laid side by side formed the longitudinal warp; shorter strips were overlaid crosswise, and, after the whole was pressed, dried, and polished, formed the writing surface. Sheets of papyrus were stuck end to end to form a roll. Ink, of sepia, animal charcoal, and other substances, was applied with a reed. These materials endured in literary use from the pyramid age in Egypt, if not before, to the 4th century A.D., surviving casually to 1250. The oldest papyrus at Cairo is of the 1st dynasty,



**Papyri.** Reproduction of part of a papyrus inscribed in the Hieratic character, containing an Egyptian romance and bearing the names of Antef, 2150 B.C., and Thothmes III, 1500 B.C.  
British Museum

but is unused. The oldest written papyrus contains records of the Vth dynasty king Isesi. The longest roll is the Harris No. 1, 135 ft. long, a panegyric of Rameses III (c. 1170 B.C.), in the British Museum. The finest rolls are the illustrated copies of the Book of the Dead. The Alexandrian library, destroyed by fire, 47 B.C., contained 700,000 works. The masses of papyri found in Egypt have yielded valuable literary remains.

**Par** (Lat., equal). Financial term for the price of a stock or share when such sells for exactly its face value. Thus if Consols stood at £100 it would be said that the price was at par. Above or below par means that the selling price is higher or lower than the face value.

**Pará.** River of Brazil. Strictly the S. distributary of the Amazon delta, it receives the Tocantins and has the island of Marajo between it and the N. Channel. It is 200 m. long with a width of from 12 to 40 m., and has a bore during the spring tides 15 ft. in height.

**Pará.** State of Brazil. It is situated in the N.E., adjacent to the three Guianas, to the E. of Amazonas, with a long coast-line on the Atlantic Ocean. The lower Amazon almost bisects the state, which contains the lower courses of the Tapajoz, Xingu, and Tocantins tributaries, and includes the island of Marajo in the Amazon delta. The only rly. is from Belem to Bragança. Most of the state is covered with dense forest. Cacao, timber, and Brazil nuts are produced; it was formerly important

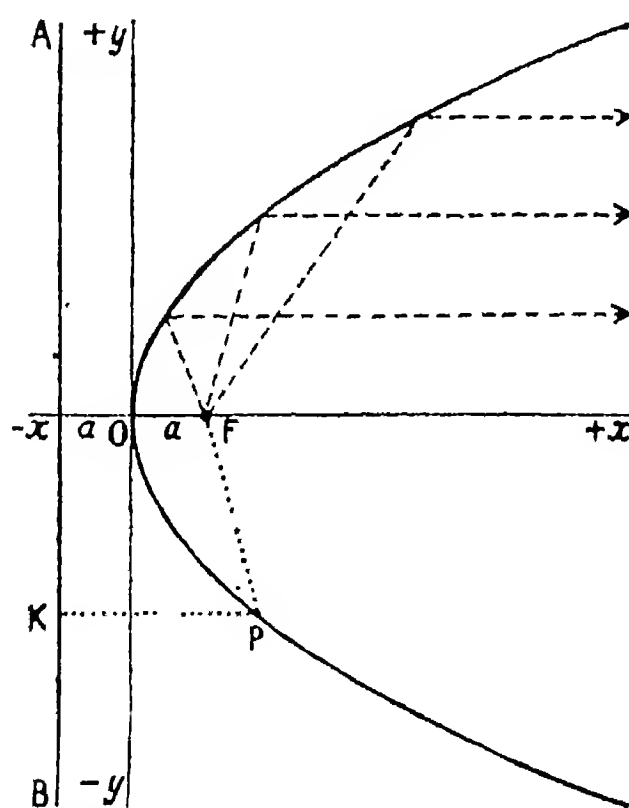
for rubber—hence Para rubber. Belem, or Pará, is the capital. Its area is 443,789 sq. m. Pop. (1950) 1,142,846.

**Pará** OR BELEM DO PARÁ. Details of this Brazilian port will be found under Belem.

**Parable** (Gr. *parabolē*, juxtaposition, comparison). Illustration of a statement in a discourse. The term is usually confined to those teachings of Christ which convey a spiritual lesson in the form of an anecdote or short

story. Popularly described as an earthly story with a heavenly meaning, a parable differs from a fable or an allegory in being either a true record of fact, or at least true to experience, while a fable always, and an allegory usually, is purely fictitious and often impossible. In the Bible the word parable is used somewhat vaguely, but its meanings may be classed under three headings—enigmatical assertions, ornate discourses, and illustrative stories. The last method of teaching was common among the Jews, and several of Christ's parables occur also in the writings of the great Rabbis.

**Parabola.** Mathematical curve, one of the conic sections, first defined (by the Greeks) as the curve



Parabola  $y^2 = 4ax$  with focus  $F$  at the point  $(a, 0)$  and directrix  $AB$  on the line  $x = -a$ . Rays from  $F$  are reflected parallel with the axis; for any point  $P$  on the curve,  $PF$  is equal to the perpendicular to  $AB$

produced when a cone is cut by a plane parallel to one edge; later, as the locus of a point the distance of which from a fixed point (the focus) is always equal to its distance from a fixed straight line (the directrix). The Cartesian equation  $y^2 = 4ax$  gives a parabola with its vertex on the origin and its axis along the  $x$  axis: the focus is then the point  $(a, 0)$ .

The parabola is the path of an ideal projectile moving through an unresisting medium under the influence of an initial velocity and a uniform acceleration due to gravity. The path of an actual projectile differs from a true parabola chiefly on account of air friction, wind, etc. Another property of the parabola makes it important in optics. All rays from the focus  $F$  which strike the curve are reflected along a line parallel with the axis: hence the use of parabolic reflectors for searchlights, motor headlights, etc. Conversely, all rays striking a parabola parallel to the axis (e.g. light rays from a star) are brought to an exact focus at  $F$ : hence the use of parabolic figurings for astronomical telescopes.

**Paraboloid.** Surface generated by a parabola which moves with its vertex always on another parabola, the axes of the two parabolas being parallel and their planes at right angles. The elliptical paraboloid is humped, the hyperbolic paraboloid saddle-shaped.

**Paracelsus** OR THEOPHRASTUS BOMBAST VON HOHENHEIM (c.1492–1541). Swiss philosopher, born at Einsiedeln, the

son of a physician. His education was irregular, but he acquired a knowledge of medicine, chemistry, etc. He travelled much, studied nature, and despised bookmen. Although he had no degree, he practised, and was even appointed professor of physic and surgery at Basel, lecturing in German. Of undoubted ability, though of erratic life, Paracelsus, by his successful if empirical application of mineral medicines, gave a great impetus to pharmaceutical chemistry. Accused of being a necromancer, he fled from Basel, and, after an adventurous life, died at Salzburg, Sept. 24, 1541.

Paracelsus is the hero of a work by R. Browning, published 1835, in which he is represented as a philosophical genius with lofty



**Paracelsus,**  
Swiss physician



aims, whose pride and ambition destroy his sympathy and his moral character. *Consult* Lives, F. Hartmann, 1887; A. M. Stoddart, 1911.

**Parachute** (Fr., from Ital. *parare*, ward off; Fr. *chute*, fall). Device to retard the descent of a falling body. Leonardo da Vinci (1452-1519) left notes and sketches explaining the theory of the parachute, but did not construct one. The first man to design and use a parachute was André Garnerin, who jumped from a balloon over Paris on Oct. 22, 1797. The Garnerin parachute consisted of a piece of cloth stretched over a rigid framework

observers in kite balloons. They were attached by a cord to the balloon basket and opened by the weight of the wearer as he jumped. The manually-operated parachute, fixed to the wearer, was introduced towards the close of the First Great War for use by aircraft crews, though it was not officially adopted by the R.A.F. until some years later.

The standard parachute used by the R.A.F. during the Second Great War consisted of a canopy of pure silk or high quality nylon 24 ft. in diam. with a surface area of 62 sq. yds. The canopy was made of a number of small panels,

When he jumped, the parachutist counted three, to give him sufficient time to clear the aircraft, and then pulled the release ring, so withdrawing the release pins from the slots on the pack. The flaps of the pack then opened, and the small pilot-parachute held by compressed springs, was freed to drag after it the main canopy which opened fully in  $1\frac{1}{2}$  secs. The vertical movement under the effect of gravity induced an upward air pressure which inflated the canopy and so retarded descent. The average rate of descent was about 20 ft. per sec., and by pulling on the cords the parachutist could exercise some control over the direction of his descent. Parachutes used by parachute troops were of the static line type, the rip cord being attached to the aircraft and automatically released as the wearer jumped. Parachutes used for dropping supplies were made of cotton and were smaller than those used to support men.

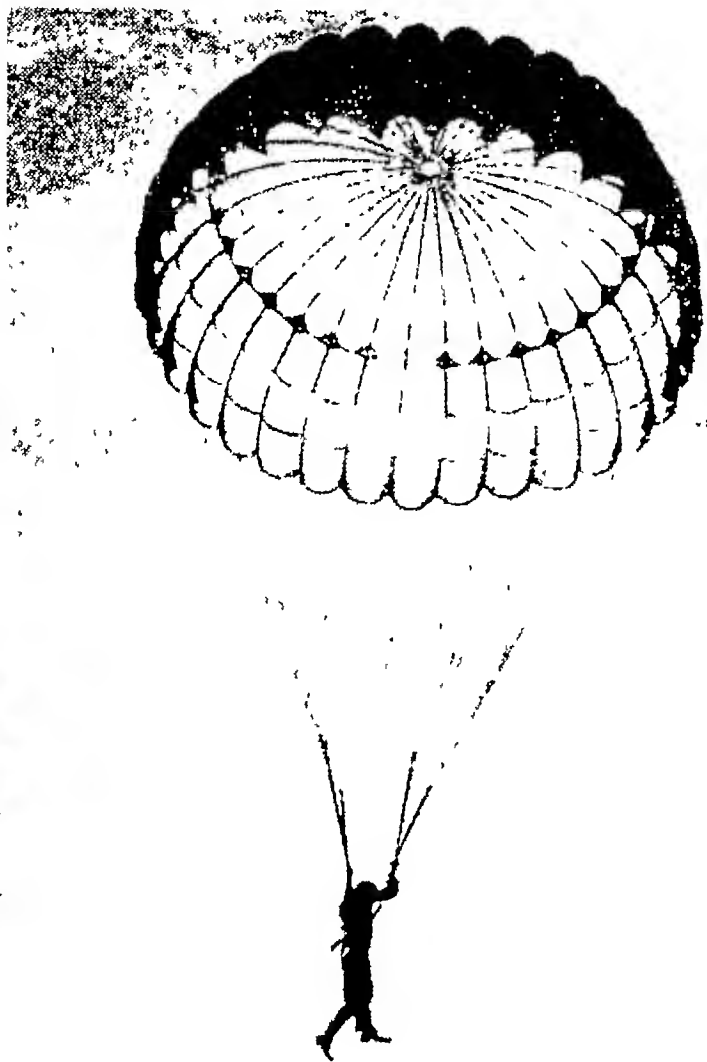
With the development of the high-speed jet-propelled fighter, it was found that a pilot obliged to use his parachute had difficulty in clearing the aircraft before his parachute opened, with the consequent risk of the canopy becoming entangled in the machine. This was overcome by the invention of the ejector parachute. In this, the pilot's seat was incorporated with the parachute and connected to an explosive charge. By pressing a button, the pilot shot himself clear of the aircraft to a safe distance, when he pulled the rip cord in the normal way.

In the Second Great War 10,000 parachutes a month were made for the British forces.

**Parachute and Cable Unit.** British anti-aircraft weapon of the Second Great War. It consisted of a number of cables, each 400 ft. long and having a rocket and folded parachute attached to its free end, coiled in a box. The rockets were electrically connected with a master switch in an observation post close to the target. The closing of the switch ignited the rockets, which carried the cables to their maximum height, when the parachutes automatically opened, so preventing the cables from falling back to earth. Cables could be fired simultaneously in any number up to 50. The weapon was particularly effective against dive-bombers, the cables either becoming entangled in the aircraft or forcing it to take evasive action. It



Parachute. Left, soldier with packed parachute fastened to his back before entering an aeroplane. Right, a descent



of wooden laths. Later, silk parachutes were stretched over balloons and kept open ready for emergency descents.

In 1838 John Hampden designed an umbrella type of parachute consisting of a piece of canvas 15 ft. in diameter stretched over whalebone ribs. He jumped from a height of 9,000 ft., taking 13 mins. to descend. Towards the close of the 19th century parachute descents were a popular exhibition at the Alexandra and Crystal Palaces, London. Free, or unpacked, parachutes were used, the jumper and his equipment being taken up in a balloon. The chief defect of early parachutes was the excessive oscillation to which they were subject during descent; in 1885 this was overcome by a U.S. parachutist, Thomas Baldwin, who fitted a hole or vent in the top of the fabric.

During the First Great War, parachutes were provided for

so that in the event of a rip the tear would not extend beyond one section of the material. Evenly spaced around its circumference were 36 shrouds, or lines of silk cord. These met at a point some distance below the fabric, and were attached to the wearer's harness by a ring. On top of the canopy was a small pilot-parachute 3 ft. in diam. Parachutes and shrouds were folded into a pack 18 ins. square, the whole weighing 18 lb. The pack was attached by long straps to a web harness passing over the shoulders and between the thighs of the wearer, who could carry the pack on his back or lap or use it as a seat. The folded canopy was held in the pack by two pins running through slots in the outer cover, and attached to each pin was a flexible steel cable, called the rip cord, which was connected to a release ring on the left-hand side of the wearer's belt.

could not, however, be sighted on a target, so that it could be used only when an aircraft came within its range and direction. Operation of the parachute and cable unit was the responsibility of the R.A.F., which used large numbers to protect dispersal points on airfields. It was also used to a limited extent in the defensive arming of merchant ships.

**Parachute Bomb.** Aerial bomb to which a parachute is attached. It was developed in the Second Great War by the R.A.F. so that low-flying bombing could be carried out with accuracy. Parachute bombs ranged in size from a small fragmentation bomb to those weighing 1,000 lb. The parachute was held in a container attached to the end of the bomb, and the canopy opened automatically as the bomb was released from the aircraft. The bomb was fired by time or contact fuse. Large parachute fragmentation bombs were particularly effective in attacks on aircraft dispersed on aerodromes, the casing breaking into 1,500 pieces on impact and striking the target with a velocity of 4,000 ft. per sec. There was little defence against the parachute bomb, as destroying the parachute by gunfire merely brought the bomb down faster, when it exploded on contact.

**Parachute Regiment.** Regiment of the British army. It was formed in 1942 to provide personnel for the Parachute bdes. and Independent (Pathfinder) companies within the airborne divs. With the Glider Pilot regt. (*q.v.*) it constituted the Army Air Corps (*q.v.*). All personnel of the Parachute regt. are volunteers, and recruits are given special physical hardening training to fit them for the four weeks' parachute course at the parachute instruction school. Primary training at the school consists of exercise on various types of ground apparatus designed to teach the correct principles of breaking falls, etc. Recruits then make two jumps at 800 ft. from a captive balloon by day, after which they make five jumps by day from an aircraft and one by night from a captive balloon. On successful completion of the course, recruits are awarded their parachute wings, worn on the right sleeve, and are entitled to parachute pay.

The parachute is merely the means of getting members of the Parachute regt. into battle; when they have landed they fight as infantry.

When making their drop, parachute troops are as lightly equipped as possible. Their non-offensive equipment comprises two days' food and water, a crash helmet, and thick-soled boots. Weapons carried are revolvers, sub-machine-guns, light automatic rifles, and hand grenades. Heavier equipment, such as artillery, demolition material, radio transmitters and receivers, motor vehicles, and tools, as well as additional rations, are dropped in containers by separate parachutes.

In 1958 the Parachute Regt. was organized in three battalions as part of the strategic reserve. There are a number of Territorial army battalions affiliated to the Parachute Regt.

**Parachute Troops.** Soldiers carried in aircraft and dropped by parachute on to their objective.

The U.S.S.R. was the first country to train military parachutists in any numbers. By 1935 the Red army had at least one fully-equipped and trained parachute battalion. At the army manoeuvres held in Russia in 1937, and observed by British and German military missions, a mechanised brigade, complete with light artillery and tanks, was carried a distance of 200 m. in converted bombers and dropped at night by parachute without accident. By 1939, the Red army was estimated to have at its disposal some half million men trained in the use of parachutes. Nazi Germany, appreciating the potentialities of parachute attack, in the years immediately preceding the Second Great War trained thousands of troops in the use of parachutes. France in the autumn of 1938 also carried out a convincing demonstration by dropping a fully-equipped machine-gun co. of 60 men from six troop-carriers. Within five minutes of landing the co. was free of its parachutes and had set up its machine guns. British military opinion dismissed parachute attack as of little practical value, holding that any troops successfully dropped would be wiped out before they could go into action.

Parachute troops went into action for the first time on Nov. 30, 1939, when Russia invaded Finland and dropped a number of parachutists near Petsamo. Germany used parachute troops successfully in her attacks on Norway, the Netherlands, Belgium, and France in 1940; she assembled a large parachute force for the invasion of Great Britain, but in

April, 1941, diverted it to the attack on Greece and Crete. German parachute troops were employed on a comparatively small scale in the campaigns against the U.S.S.R.; principally because of the great distances and the mobility of the Soviet armies. One of their most notable uses in Russia was as a defensive measure in Nov., 1942, when the Soviet army was advancing on Kharkov. Von Bock then dropped a large force on the Russian communications, disorganizing the Soviet advance and enabling the Germans to regroup their troops.

British parachute troops first went into action in Feb., 1941, when a small force was dropped in S. Italy in an unsuccessful attempt to destroy a viaduct. Better success attended the newly-formed Parachute regt. (*q.v.*) in the raid on Bruneval (*q.v.*), Feb., 1942, and those of the unit taking part in the combined operations attack on St. Nazaire (*q.v.*) the following Nov. British parachute troops occupied enemy airfields in the N. African landings, Nov., 1942, took part in the invasion of Sicily in July, 1943, and in the struggle for the Anzio beach-head, Jan., 1944. British and U.S. parachutists formed the spear-head of the Allied invasion of Normandy, June 6, 1944; more parachute troops were used in that operation than the Germans had had available for the invasions of Norway, the Netherlands, and Crete. A large force of British parachute troops was landed at Arnhem (*q.v.*) on Sept. 17, 1944. U.S. troops landing at Eindhoven and Nijmegen on the same day.

Besides the part they played in N. Africa and Europe, U.S. parachute troops also fought in the Pacific war, *e.g.* in operations in the Markham valley in New Guinea Sept., 1943. The Japanese used parachute troops in their attacks on Malaya, the Netherlands East Indies, Borneo, and the Philippines, 1941-42.

The training of parachute troops is described under Parachute Regiment. *See also* Airborne Forces.

**Paraclete** (Gr. *paracletus*). Word used in S. John's Gospel as a name of the Holy Ghost or Holy Spirit (chaps. 14, *vv.* 16 and 26; 15, *v.* 26; 16, *v.* 7). It is also used, in the 1st Epistle of S. John (2, *v.* 1), of Christ. From Chrysostom's time, the word has been translated Comforter, a custom based on Isaiah 40, *v.* 1, and on the fact that *paraclēsis* sometimes means consolation, but modern commentators



prefer the translation of "one called in" or "called to the side of another," for the Gospel reference, and that of Advocate in the Epistle. Paraclete is a title of the Holy Ghost in the Roman Breviary. See Abelard; Holy Spirit.

**Paradise.** Word used as a synonym for the garden of Eden; for a region of surpassing loveliness; as a place to which the souls of the righteous are transplanted after death; and sometimes for heaven. The Heb. *pardes*, and Gr. *paradeisos*, were borrowed from old Persian *pairi-daēza*, a park, especially a deer park or garden of the Persian kings. Applied in the LXX, Syriac and Vulgate versions, though not in the Hebrew original, except in Ezek. 28, v. 31, to the garden of Eden, the word came to be used by the apocalyptic writers to the heavenly counterpart of the earthly garden.

The phrase Paradise of Fools is applied to a place midway between Paradise and Purgatory, in which those who have sinned without intention await the Judgement Day. The medieval conception of Paradise is elaborated in the third part of Dante's Divine Comedy.

The Muslim paradise is usually spoken of as a place of unsatiating sensual pleasure; modern commentators on the Koran insist that Paradise is not only a place in which to enjoy the blessings and rewards of good deeds on earth, but a starting-point of unending spiritual advancement. See Angelico, illus. p. 437; Eden; Heaven; Hell; Purgatory.

**Paradise Fish.** Name given to an artificially modified fish belonging to the genus *Macropodus*. It is nearly allied to the climbing perch, and has been developed in China by a long process of selective breeding. It is striped with red, gold, and green, and has long wavy fins and tail; it is hardy, and breeds readily in small aquariums.

**Paradise Lost.** Epic poem by Milton, published in 1667. It begins with the fall of Satan and his rebellious host of angels from heaven and then proceeds to man's fall, consequent upon the warning of the powers of darkness against the beings whom God had put in Paradise in the newly created world, and so to the expulsion of Adam and Eve from the Garden of Eden. The work is acknowledged as the great representative of the epic in English literature, written in finely cadenced and dignified blank verse, to which the poet imparted something of a new music,

and as the greatest of all poems in its use of supernatural machinery. See Milton, John.

**Paradise Regained.** Epic poem by Milton, published in 1671. Stimulated by Thomas Ellwood, a Quaker friend, who remarked: Thou hast said much here of Paradise Lost, but what hast thou to say of Paradise Found? Milton set about this sequel in four books. The subject is the temptation of Christ, by whose victory over Satan the effect of the temptation of Adam was reversed. The poem differs from Paradise Lost in the much greater simplicity of the story, which is mainly an expansion of the Gospel narrative, and in the singular austerity of the style. It has never been popular, although some critics have expressed the highest admiration for it. See Milton, John.

**Paradiso,** GRAN. Mountain of Italy, in Aosta prov., Piedmont. The culminating peak of the Graian Alps, and the highest mountain in Italy, alt. 13,324 ft., it overlooks the Piedmont plain and is S. of the Dora Baltea. The ascent is usually made from Valsavaranche, skirting the Gran Paradiso glacier; the descent frequently across the Glacier de la Tribulation to Cogne. It was first climbed by Cowell and Dundas in 1860. See Alps; Mountaineering.

**Parados** (Fr. from Ital. *parare*, to shelter, and Fr. *dos*, back). Military term for the cover at the back of a trench. In fortifications and trenches it is necessary to provide cover from reverse fire, i.e. fire directed at the occupants from



Paradise Fish. The artificially modified fish bred in China

the rear of the position, or badly aimed shots from another position, and from flying fragments of shell exploding behind the position. The cover provided, whether it be earth, sandbags, or masonry, is termed the parados of the position.

**Paradox** (Gr. *para*, contrary to; *doxa*, opinion). Statement contrary to accepted opinion, apparently self-contradictory, or reversing that which is commonly understood. A legitimate figure, serving to illus-

trate an argument either by exaggeration, or by revealing a side of it in a new light, it is one that becomes dangerously facile, and degenerates into little more than playing with ideas as a punster plays with words. Modern writers who have made something like a cult of the paradox are Wilde and Chesterton, the latter having defended the use of Latin in church services, because "a language must die to be immortal."

**Paraffin.** In organic chemistry, term applied to a homologous series with the general formula  $C_nH_{2n+2}$ . The normal members have the carbon atoms linked in a straight chain, and isomerism (*q.v.*) can arise by branching. The simplest member is methane (marsh gas),  $CH_4$ . The next three members, ethane, propane, and the butanes, and an isomer of pentane, tetramethylmethane, are also gases at normal temperature and pressure. From pentane to pentadecane,  $C_{15}H_{32}$ , they are liquid, and from hexadecane,  $C_{16}H_{34}$ , onwards they are crystalline solids. The paraffins are stable saturated compounds, but it is possible to substitute various elements such as the halogens for one or more of the hydrogen atoms. Gaseous, liquid, and solid paraffins occur naturally in petroleum, shale oils and some tars derived from coal and lignite.

In the petroleum industry the term paraffin usually refers to the wax (paraffin wax) removed from certain crude oils. The principal source is the lubricating oil distillate from paraffinous crudes. When cooled the wax crystallises, causing a great increase in viscosity. Removal of the wax is therefore necessary to improve the quality of the lubricant. The oil is chilled and filter-pressed, crude wax being left. It still contains oil which is removed by sweating, and in the same process the wax itself is divided into a number of grades. For final purification molten wax is filtered through fuller's earth. Paraffin wax has many applications: candles and nightlights; waterproofing paper, cartons, cloth, concrete, wood; coating certain foodstuffs; electrical insulators and dielectrics; polishes.

The soft paraffin of the British pharmacopoeia is a petroleum jelly (petrolatum) which has been refined. Petroleum jelly is a residual product from the refining of certain crude oils and is composed of microcrystalline waxes intimately associated with oil. In the U.K. paraffin or paraffin oil are names popularly given to kerosine (*q.v.*).

**Paragua.** Island of the Philippines, also called Palawan (*q.v.*).

**Paraguay.** River of S. America, principal affluent of the Paraná. It rises in the Sierra Diamante in the Matto Grosso plateau of Brazil, and flows S. across the state of Paraguay to join the Paraná above Corrientes in Argentina. Above Asunción it receives the São Lourenço, Taquary, and other tributaries from the E. At Asunción the Pilcomayo, and lower

down the Bermejo, drain from the Andes across El Gran Chaco. The Pilcomayo and lower Paraguay form the W. boundary of the state of Paraguay. Steamboats from Buenos Aires reach Asunción. For smaller boats the Pilcomayo is navigable for 150 m. and the main stream for nearly the whole course. Its length is 1,500 m. The confluence with the Paraná was discovered by Sebastian Cabot in 1526. See Asunción.

## PARAGUAY: THE LAND & THE PEOPLE

Capt. Grenville Holms

*Further information will be found in the articles on the towns and rivers of Paraguay. See also South America; Jesuit.*

Paraguay, or La República del Paraguay, is a S. American republic forming part of the Rio de la Plata system. It has no sea coast, but possesses access to the Atlantic by the open waters of the Rio de la Plata. Paraguay proper, the main



Paraguay arms

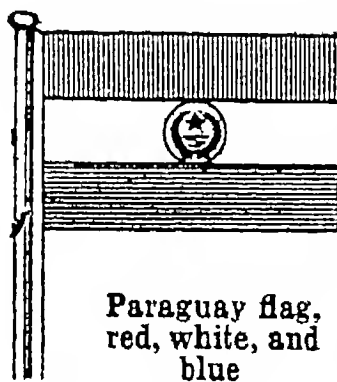
and more settled part of the country, forms an irregular rectangle, about 62,000 sq. m. in extent, bordered by the river Paraná and its great confluent the Paraguay, which gives its name to the republic. These streams form boundaries separating Paraguayan territory from Argentina on the W., S., and S.W., and from Brazil on the E.

To the N. the river Apá forms the Brazilian boundary. Besides this clearly defined main territory, the republic owns the vast region of the N. Chaco, about 95,000 sq. m., separated from the Argentine Chaco to the S.W. by the river Pilcomayo, and from Bolivia to the N.W. by a frontier settled in 1938. The Paraguayan Chaco is a region distinct from Paraguay proper. Most of it lies within the tropics, and is a country of forest and swamp with intervening grassy savannas, of winding rivers, affluents of the Paraguay, which frequently shift their course and overflow their banks. Settlement by white men is only beginning in the Chaco, and tribes of Indians still in a state of savagery inhabit the river banks.

Paraguay is traversed in its N. part by the Tropic of Capricorn. Thus the climate is between tropical and subtropical. The summers are hot and bring a plague of insects, especially near the rivers; the winters are warm, but temperate and agreeable. The rainy season is in summer. A great part of the country is clothed with

magnificent forest yielding many kinds of valuable and beautiful timber, varied by abundance of flowering shrubs. Ranges of hills, seldom exceeding 1,500 ft. alt., rise above grassy plateaux admirably adapted for pasture. The rich soil responds readily to cultivation and can produce all tropical and subtropical fruits. The river Paraguay provides a splendid natural waterway from N. to S.

The population at the census of 1950 was 1,405,627. Asunción, the capital and chief port, situated on the left bank of the Paraguay opposite the mouth of the Pilcomayo, had 205,605 inhabitants; Villarrica 31,000; Concepción, a port on the Paraguay, 17,000. The people are of Spanish, Indian, and mixed Spanish and Indian descent.



Paraguay flag, red, white, and blue

The country is bilingual: an aristocracy of European or mixed origin fills the chief official posts and the ranks of the professions, and speaks Spanish. The peasantry and working classes speak Guaraní, the language of the extinct Guaraní Indians who inhabited the country when the Spaniards arrived. More perhaps than in any other S. American republic the Indians have been adopted into the social scheme and have tranquilly accepted this arrangement, of which the foundations were laid by the conquistadores of the 16th century. The stormy history of the republic and its peculiar social system have precluded any marked literary development. There is a prolific newspaper press.

**CONSTITUTION.** Under a new constitution ratified by plebiscite Aug. 4, 1940, the president was accorded considerable powers.

He holds office for five years, and appoints his cabinet of nine, which need do no more than inform the diet (consisting of one elected member for every 25,000 inhabitants) and council of state (nominated) of its policy. The country is divided into two parts—Oriental and Occidental—the Paraguay river dividing the two.

There is a small standing army of about 6,000. In the event of war, service is compulsory in the army, the national guard, or the territorial guard. The R.C. church is established, and all religions are tolerated. Primary education is free and nominally compulsory. There is provision for higher education. The guaraní (equivalent to 32.3625 U.S. cents) replaced the former unit of currency, the peso, in Oct., 1943.

### River Communication

The main channel of communication is the Rio de la Plata. Large river steamers and small sea-going ships penetrate as far as Asunción. Thence N. the Paraguay is navigable by smaller steamers throughout the limits of the republic. The broken and rapid stream of the Upper Paraná above its junction with the Paraguay, offers less easy and less continuous navigation. The use of small motor-boats is gradually making available for transit the rivers which flow between the ridges of hills into the Paraguay.

Asunción has direct rly. communication with Buenos Aires. A steam train-ferry crosses the Alto Paraná from Encarnación in Paraguay to Posadas in Argentina, and links the Central Paraguay rly. with the Argentine North-Eastern. Paraguay has altogether 713 m. of rly., and 150 m. of all-weather roads; total road mileage is 3,759 m. There are three airports, served by Brazilian and Paraguayan aeroplanes.

Almost the whole foreign trade passes through Buenos Aires. Quebracho extract from the tree of the same name, used in tanning, is a valuable product, and still more so is the *yerba maté*, gathered wild and also grown in plantations, which provides the popular beverage of Argentina, Uruguay, and Chile. The pastoral industry has made great advance through improvement of breeds, and through the establishment of freezing and canning plants. The chief exports are hides, *yerba maté*, tangerine, orange, tobacco, timber, meat, cattle, and quebracho extract. Foreign war, civil strife, political disturbances have retarded progress;



so also have scanty population, primitive methods of life, scarcity of labour and of machinery.

**HISTORY.** The history of Paraguay since the Spaniards arrived in the early 16th century comprises two distinct stories, that of the early Spanish settlement at Asunción, and that of the singularly interesting Jesuit missions on the Alto Paraná. It is a fallacy to find the origin of the republic in the missionary work of the Jesuits. Those missions certainly facilitated the growth of Asunción and of the other Rio de la Plata settlements, including Buenos Aires, by the orderly pacification of a neighbouring territory and by providing some defence against enemies, whether European or indigenous. But the curious politico-religious community founded by the Jesuits was virtually a separate and rival state, remote and excluded from the Spanish settlements. It lay chiefly within the present confines of the Argentine republic; and after the expulsion of the Jesuits in 1767 and before the birth of the Paraguayan republic, which sprang in fact from Spanish conquest and settlement in the region of the river Paraguay, it virtually ceased to exist.

#### Founding of Asunción

The early exploration in these regions by Sebastian Cabot and others can only be mentioned here. Continuous history begins with the foundation of the city of Asunción in 1536. When, five years later, the infant Spanish settlement at Buenos Aires was abandoned, Asunción, in the country of the peaceable and amenable Guaranis, became the capital of the whole Rio de la Plata region, and the headquarters of all Spanish enterprise upon the Atlantic side of the continent. Buenos Aires, re-founded in 1580, was a colony from Asunción, and did not receive separate administrative recognition until 1620. But to a much later period the term Paraguay was commonly used to designate the whole Rio de la Plata region as far as Patagonia. However, from 1620 to 1776 Paraguay proper was a distinct province, with a royal governor residing at Asunción and subordinate to the viceroy of Peru.

The true founders of Paraguay were the conquistadores and governors of the 16th and early 17th centuries, of whom the most notable were appointed by the Spanish settlers themselves, by virtue of a decree which empowered them to elect a governor in case of accidental vacancy. The early settlers

put a liberal interpretation upon this privilege, deposing and replacing unpopular governors upon occasion. Later the municipality of Asunción claimed the exercise of this privilege: and this almost self-contained Spanish settlement, remote from royal and viceregal authority, pursued a singularly agitated and independent political course.

In the middle of the 17th century the bishop of Asunción made himself governor with the support of the town council and citizens, defying superior authority until reduced by force of arms. Again, from 1720 Asunción acted almost like an independent city-state, accepting governors approved by the people and resisting all outside authority. Finally, in 1736, the revolt of the *comuneros*, the Paraguayan insurgents in Asunción, was put down by a regular military expedition from Buenos Aires.



Paraguay. Map of this South American republic

and the country reduced to submission. From 1776 to 1820 the province of Paraguay formed part of the newly-constituted viceroyalty of Buenos Aires.

In 1811 Buenos Aires, having achieved independence, sent a force up the river under Belgrano to offer to the Paraguayans independence and union with the Argentine provinces. Paraguay declined union but resolved upon independence, deposing the royal governor of Asunción, and setting up a local administration which soon merged into personal despotism under an able lawyer, Francia. From 1816 to his death in 1840 Francia exercised an absolute tyranny, a long reign of terror. He sealed up the country, forbade all commerce, all communication with the outside world, and, with rare exceptions, allowed no one to cross the frontier in either direction. Francia was succeeded by Carlos Lopez, who opened the river to commerce, but continued Francia's system of internal tyranny. In

1862 he was succeeded by his son, Francisco Lopez, an audacious megalomaniac who aimed at setting up a quasi-Napoleonic empire in S. America. He committed acts of war against Brazil, violated Argentine territory, and brought upon his country a combined invasion by the armies and ships of Brazil, Argentina, and Uruguay. During five years of war Paraguay was overwhelmed, devastated, and depopulated. When the struggle ended with the death of Lopez in 1870, nearly all the men and most of the women had perished. Victory rested with the three allied republics, but the true heroes of the war were the poor Indian peasants of Paraguay, who, in frail canoes, attacked armed ships of war and struggled to the death against overwhelming odds.

The country has since suffered from a succession of internal conflicts and presidential "revolutions," though the degree of recovery from the catastrophe of 1865-70 has been remarkable. Paraguay remained neutral during the First Great War. The country broke off relations with Germany, Italy, and Japan Jan. 26, 1942, and declared war on Germany and Japan Feb. 9, 1945, but took no active part in the conflict.

**Bibliography.** A Vanished Arcadia, R. B. C. Graham, 1901; History of S. America, 1854-1904 C. E. Akers, 1904; Paraguay, W. H. Koebel, 1917; Paraguay, P. de Rondo, 1935; Une Civilisation du Miel: Les Indiens Guayakis due Paraguay, J. Vellard, 1939; Paraguay: History, H. G. Warren, 1949.

**Parahyba** OR PARAÍBA. State and river of N.E. Brazil. The state, area 28,846 sq. m., fronts the N.E. coast and lies between Rio Grande do Norte and Pernambuco. It has a rainy season lasting March-June. The coast has several bays and the large estuary of the Parahyba river, all spoilt as harbours by coral reefs. Cotton, cotton-seed, and manioc (tapioca) are the principal products. The capital, João Pessoa, stands on the estuary of the river. Pop. (1950) 1,713,259.

The river rises in the mts. on the border of Pernambuco and flows E. for 270 m.

**Parahyba do Sul** OR PARAÍBA DO SUL. River of Brazil. It rises in the Serra do Mar in São Paulo, and flows N.E. across the state of Rio de Janeiro in a narrow valley to enter the Atlantic below Campos, after a course of 658 m., of which the last 150 m. are navigable.

**Paraldehyde** (C<sub>6</sub>H<sub>12</sub>O<sub>3</sub>). Colourless liquid with burning taste and foul smell. It is used in

medicine to produce sleep, and is often employed as a safe hypnotic and as a narcotic to allay anxiety before an operation.

**Parallax.** In astronomy, the angular difference between the direction of a heavenly body as seen from the place of observation and as seen from some standard reference position.

The *annual* or *heliocentric parallax* of a star is the difference between the star's direction as seen from the earth and from the sun. In its restricted sense it is the angle subtended at the star by the radius of the earth's orbit. This angle can be measured by taking photographs of the star against a background of more distant stars at intervals of six months when the earth is at opposite sides of its orbit. It is a measure of the distance of the star. Even the nearest star (Alpha Centauri) has a parallax of only 0.75 second of arc (*see* Parsec).

The *diurnal* or *geocentric parallax* of the sun, moon, or planets is the difference between the direction of the object as seen from the centre of the earth and from its surface. If the object is directly overhead its geocentric parallax is zero; if it is rising or setting its parallax (now called the *horizontal parallax*) is equal to the angular radius of the earth as seen from the object, and is a measure of its distance. The sun's mean equatorial horizontal parallax, or *solar parallax* (8.79 seconds of arc) measures the sun's distance in terms of the earth's equatorial radius. The distance derived from this parallax is called the astronomical unit (*q.v.*).

The concept of parallax is thus connected with that of distance: large distances (parsecs) in terms of a base-line equal to the radius of the earth's orbit, smaller distances (astronomical units) in terms of a base-line equal to the radius of the earth. The word parallax has thus come to be used interchangeably with distance in astronomical parlance, and is now applied to distances where no measurement of an angle is attempted. Thus the *dynamical parallax* of a double star is its distance derived from observations of its orbit; the *mean parallax* of a group of stars is their average distance found from a knowledge of the sun's motion amongst them in space; and the *spectroscopic parallax* of a star is its distance calculated from its intrinsic brightness as revealed by its spectrum.

In photography, as the viewfinder of a camera cannot normally be in the same axis as the taking lens, there is a lateral error in positioning, known as parallax, which increases the nearer the object is to the camera. In the more expensive apparatus compensation is introduced by coupling devices which tilt the finder or focusing screen as the focus is altered so as to bring visible and recorded images into coincidence. If there is no such compensation the error must be allowed for.

Similar errors in the reading of instruments may arise when the indicator of the instrument and the scale against which the indicator is to be compared are separated. Any movement of the observer's head will cause him to see the indicator intersect the scale at different positions. Care must be taken to keep both eye and indicator in a plane at right angles to the scale. Some instruments, *e.g.* mercury barometers, incorporate devices which ensure that such errors of parallax are eliminated.

**Parallel.** In geometry, term used for straight lines in a plane which do not meet however indefinitely they are produced, *i.e.* they always remain at the same distance from each other.

By an extension of the Euclidean definition, it is used for things that are similar, *e.g.* parallel passages in literature. In electricity, accumulators are said to be connected in parallel when all the positive poles are connected to one wire and all the negative poles to another.

**Parallelepiped.** Solid figure contained by six parallelograms of which every two opposite faces are parallel. A brick is a rectangular parallelepiped.

**Parallelogram of Forces.** In mechanics, a rule for finding the resultant of two forces. The rule is as follows. If two forces acting at a point O are represented in magnitude and direction by two straight lines O A and O B, they are together equivalent to a single force, represented by the diagonal O C of the parallelogram constructed on the two straight lines passing through the point. The rule also applies to displacements and velocities or any vector quantity. The rule is implied in Sir Isaac Newton's second law of motion. *See* Vector.

**Paralysis.** Loss of power to contract muscles voluntarily. Two widely different forms occur, namely hysterical paralysis, which is a manifestation of a neurosis

and is not associated with recognizable changes in the nerves, and organic paralysis, due to disease or destruction of a nerve tissue.

Hysterical paralysis frequently follows a severe shock, either mental or physical, and is associated with many disorders of the mind, and nervous balance. Functional paralysis may follow an organic injury, with or without involvement of a nerve, which has necessitated the patient's keeping a limb in a fixed position (as in a splint) for a considerable time. Any form of organic paralysis may be simulated by the functional type. A group of muscles alone may be affected, or there may be paralysis of an arm or a leg, or of more than one limb. With the loss of power in the muscles there may be loss of sensation in the skin. An hysterically paralysed limb may be quite limp and flaccid, or there may be a firm contracture of groups of muscles, the latter condition being more frequent after a wound.

Hysterical paralysis is due to a fixed idea in the mind of the individual, following the shock he has received, that the limb is actually powerless, an idea which it is often difficult to dispel. Treatment accordingly is directed towards breaking down this resistance and inducing him to use the affected muscles. Sometimes recovery occurs suddenly, as a result of a shock or fright. Usually, however, recovery under treatment is brought about by suggestion treatment and re-education in the use of the muscles.

Organic paralysis is a symptom of many diseases of the nervous system which are accompanied by degenerative changes in the nerves, or it may be the result of injury to a nerve. When the nerve which is the immediate supply of a group of muscles is severed, *e.g.* by a bullet, the paralysed muscles are limp, show marked wasting, and eventually lose the power of reacting to electrical stimuli. Paralysis may also be due to injuries of nerves or nerve centres which do not immediately supply muscles, but control the nerve cells which do supply the muscles, as in the paralysis of limbs following an injury to the brain, or in a case of a haemorrhage into the brain from rupture of an artery, as in apoplexy.

The diseases most frequently responsible for organic paralysis are apoplexy, disseminated sclerosis, and anterior poliomyelitis (infantile paralysis).



**Paralysis Agitans** OR SHAKING PALSY. Chronic disease of the nervous system. It usually occurs in people past middle life, men being more frequently affected than women, and is incurable. The cause is unknown. The disease comes on gradually, and is characterised by tremor, which may occur in the hands or feet or both. Movements of the thumb and fingers resemble those that would be made in rolling a pill. Sometimes the head is also affected by the tremor. Weakness of the muscles occurs, and the movements of the limbs become slow and stiff. The attitude of the patient is characteristic, the head being bent forward and the back bowed. In walking he leans forward. The face is without expression. Various anti-spasmodic synthetic drugs relieve the symptoms.

**Paramaribo.** Capital and chief seaport of Surinam (Dutch Guiana). It lies at the confluence of the Surinam and Commewijn, some 10 m. from the sea; the commodious harbour, taking vessels of 19-ft. draught, has two forts—Zeelandia and New Amsterdam. There is also an airport. Coffee, cocoa, sugar, and rum are exported. Pop. (1955) 96,950.

**Paramoecium** OR SLIPPER ANIMALCULE (Gr. *paramēkēs*, oblong). Lowly infusorian animal belonging to the Protozoa. Just visible as a speck to the naked eye, it is common in infusions of decaying vegetable matter, and can usually be secured by steeping rotting leaves in water for a few days. It is oval and flattened in form, one end being thicker than the other, and it swims freely by means of the vibratile cilia with which it is covered. There is no stomach, the food particles being assimilated by the body protoplasm generally. Reproduction takes place by fission, each animal splitting into two, and by a complex sexual process.

**Paraná.** Second largest river in S. America. With the Uruguay, it occupies the Plate Basin between the Brazilian Highlands and the Andes of Bolivia; it drains the great lowland which extends N. from Buenos Aires to the Matto Grosso. The Paraná begins at the confluence of the Paranahyba and Rio Grande, flows S.W. as far as Posadas, W. until it receives the Paraguay, and then S.S.W. past Corrientes to Rosario, whence it goes S.E. to the Rio de la Plata. In its upper course in Brazil it receives many rapid rivers. Above the great Guaira Falls the main stream is navigable for 400 m.

Below the falls the Paraná forms the boundary of Paraguay; below Posadas are the Falls of Apipé, below which navigation is uninterrupted for vessels of 300 tons. Below Corrientes it flows through Argentina past La Paz, Santa Fé, Paraná, and the great river port of Rosario; in this section it receives its second great tributary from the Andes, the Salado. Its total length is estimated at 2,800 m. It was first ascended as far as the Paraguay by Sebastian Cabot in 1526.

**Paraná.** State of S. Brazil. It extends between the Paraná river on the frontier of Paraguay and the Atlantic Ocean. The Serra do Mar rises sharply from the shore as part of the Brazilian Highlands, from which the long slope to the W. is drained by the Paranapanema, Ivahy, Piquiry, and Iguassú, all affluents of the Paraná river. The W., the narrow coastal lowland, and the mts. are all forested, and the forested lowlands are hot, damp, and unhealthy. Much timber is cut from the forests. Maté, cotton, cereals, and fruits are cultivated on the fertile uplands, and rice on the coastal lowlands. Deposits of coal exist. Curitiba is the capital. The state covers 93,269 sq. m. Pop. (1950) 2,149,509.

**Paraná.** City of Argentina, capital of the state of Entre Rios. Situated on the river Paraná

has rly. connexion with Curitiba, 80 m. to the W., São Paulo, and Rio de Janeiro, and daily air services. Maté, sugar, rice, and cereals are exported. Pop. est. 6,000.

**Paranahyba.** River of Brazil. One of the headstreams of the Paraná, its waters ultimately reach the Plate estuary. W. of the Brazilian Highlands, a wide depression extending to the Goyaz Plateau is occupied by the Paranahyba and Paraná, which flow S.W. for 500 m. and receive numerous tributaries from the heights on both sides. The name Paraná is applied to the main river below the confluence of the Paranahyba with the Rio Negro. The Paranahyba separates the Brazilian states of Goyaz and Minas Geraes.

**Paranoia** (Gr. *para*, beside; *nous*, the mind). Form of mental disorder characterised by delusions and hallucinations of a persecutory nature. It occurs in both sexes and does not usually manifest itself until the 4th or 5th decade, though it may occur in quite young people from about 16 onwards; sometimes it is associated with schizophrenia. In women there is usually a fear of sex or guilt in relation to sexual thoughts or feelings; this is often true of men also.

People who develop paranoia are usually of a somewhat touchy and suspicious temperament with rigid

views and strong likes or dislikes. They are often very able and of good intellectual capacities. They are unable to tolerate criticism or any opposition and ascribe this to the animosity and ill-will of those around them. They may believe that they are surrounded by dangerous and malignant enemies, and so



Paraná, Argentina. Plaza and cathedral of S. Miguel

opposite Santa Fé, with rly. connexions with Concepción on the Uruguay, and with Buenos Aires, 350 m. to the S.E., it is an important river port and exports the agricultural produce of the state. The cathedral is reputed to be the most beautiful in Argentina. Local industries are flour milling and meat packing. From 1852 to 1861 Paraná was the capital of Argentina. Pop. 83,800.

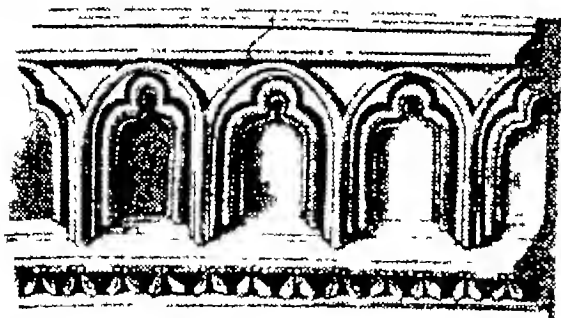
**Paranagua.** Seaport of Brazil. Situated on the bay of the same name in the state of Paraná, it

may become violent, even homicidal. They have no insight and are completely out of touch with reality.

Freud considered the root cause of paranoia to be a homosexual fixation successfully repressed until some strain or frustration arouses so strong a wave of homosexual feeling that the forbidden longing returns to consciousness in a disguised form. This explanation is not generally accepted.

**Parapet** (Ital. *parare*, to guard; *petto*, breast). Term in architecture denoting a low wall rising from

the lower level of a roof. In the medieval castle it was usually battlemented, and the more elabo-



Parapet. Example of Early English parapet in Salisbury Cathedral

rate examples also pierced with tracery. The parapet was revived in Georgian architecture, in combination with the hipped roof, but in the form of a balustrade.

As a military term a parapet is the head cover provided on the forward face of a trench or fortification to protect the occupants from the effects of fire or fragments of projectiles bursting in front of the position. *See* Battlement; Castle; Entrenchment.

**Paraphernalia** (late Lat. from Gr. *para*, beside; *phernē*, dower). Term of English law. It is descriptive of articles of personal adornment and apparel given by a husband to his wife, not as her absolute property, but for her use. Before the Married Woman's Property Act of 1870, subsequently amended, he could sell them or otherwise dispose of them, but on his death they became the wife's as against the husband's executors. The word has also acquired a more general meaning, more or less synonymous with miscellanea.

**Paraphrase.** Rendering in other words of anything said or written, generally for the purpose of elucidation. The recasting of the works of great writers into other words in the same language was a practice recommended by the ancient teachers of rhetoric to their pupils with a view to their obtaining command of vocabulary and syntax. Formerly paraphrase was restricted to such recasting of prose, metaphrase being the term applied to poetry. The most famous example of paraphrase now generally known is the metrical version of the Psalms in use in the Presbyterian Church of Scotland. *See* Psalter.

**Paraplegia.** Medical term for paralysis which affects both legs. *See* Locomotor Ataxia; Myelitis; Paralysis.

**Pará Rubber Tree** (*Hevea brasiliensis*). Tree of the family Euphorbiaceae. A native of Brazil, it has alternate leaves, divided into

five leaflets, finger fashion. The bell-shaped flowers are greenish white and the sexes separate. The tree abounds in a thin, milky juice which exudes when incisions are made in the trunk. It is collected in earthen vessels and hardened by exposing it to smoke, when it becomes crude rubber or caoutchouc. *See* Rubber.

**Parasite** (Gr. *para*, beside; *sitos*, food; *parasitos*, one who eats at another's table). Name given to an organism which lives at the expense of and in close contact with another organism, called the host. Parasites are common throughout the plant and animal kingdoms. Both parasite and host may be animals, *e.g.* the liver-fluke in the sheep's liver which causes liver rot. The parasite may be a plant, the host an animal, *e.g.* the fungus which in man causes athlete's foot. Both parasite and host may be plants, *e.g.* heath clodder which feeds entirely on various heath plants. The parasite may be an animal, the host a plant, *e.g.* green flies which pierce flowering plant stems and suck up sap. In a few animals the male acts as a parasite on the female, as in certain deep sea angler fish, the dwarf male of which becomes, when young, permanently fused to the female, thus obtaining its food via the blood of the female.

The extent of dependence on the host varies greatly. Some parasites live independently away from their hosts at certain stages, *e.g.* the hookworm passes through the early stages of its development in the open, the adult stage only infecting the intestine of man. A form like the flea is even more independent, passing from one host to another freely and often living without a host for days at a time. When related to their hosts endoparasites are internal, *e.g.* the malarial parasite, which lives in the red blood cells of its host. Ectoparasites, *e.g.* the flea, live on the external surface of their hosts. All parasites are small relatively to their hosts, and they often show certain modifications in structure; they tend, for example, to lose their organs of locomotion and of sense. The effects of parasites upon their hosts vary. Some live in a state of successful balance with their hosts, causing no marked ill effects; but others never achieve a successful relationship, and these pathogenic forms cause illness or death. Typhoid fever is caused by parasitic bacteria, sleeping sickness by a blood protozoon, and elephantiasis by a roundworm.

Parasites play an important part in controlling the balance of numbers in animal communities, since, by preying on others, they constitute one of the factors which prevent unchecked increase. *Consult* Bacteriology, C. H. Browning, 1925; Protozoology, C. M. Wenyon, 1926; Helminthology, Medical and Veterinary, H. A. Baylis, 1929; A History of Fishes, J. R. Norman, 1931.

**Parasol** (Ital. *parare*, to ward off; *sole*, sun). Light form of umbrella used for protection against



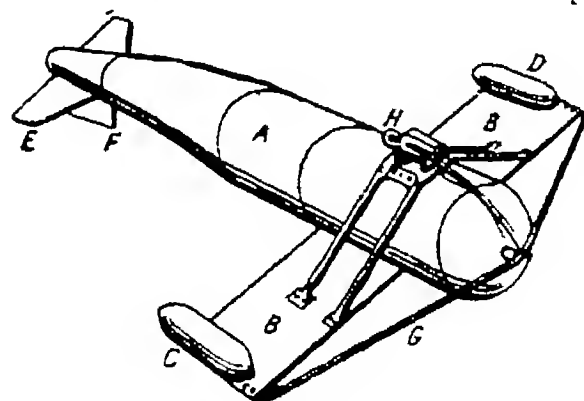
Parasol of paper, as used in Japan

the sun. Parasols are usually made of silk or other light material, although in China and Japan, where they are extensively used by both sexes, many are of coloured paper. Among some peoples the right to carry

a parasol is confined to the chiefs. *See* Umbrella.

**Paratyphoid Fever.** Disease resembling a mild form of typhoid fever. The incubation period is ten days, and a temperature lasts perhaps 18 days. Isolation is necessary and the treatment is the same as for typhoid fever (*q.v.*).

**Paravane.** Device to protect a ship against moored sea mines. Invented in the First Great War by



Paravane. Diagram of the main components of a paravane. A. Torpedo-shaped body. B. Hydrovanes. C. Weight. D. Float. E. Elevators. F. Rudder. G. Cutting blade. H. Hook for saw line

Commander C. D. Burney, and further developed in 1939-45, it consists of a torpedo-shaped body fitted with hydrovanes. Attached to one hydrovane is a float and to the other a weight. At the rear of the body is a rudder which, activated by a hydrostatic valve, regulates the depth of flotation. The hydrovanes are so shaped that, when the towline becomes taut, the paravane submerges to the determined depth and sweeps out from the bow of the towing ship.



Stretched across the front of the paravane is a serrated blade which cuts through the mine's mooring. Paravanes are used normally in pairs, one on either side of the ship. *See* Mine.

**Paray-le-Monial.** Town of Saône-et-Loire dept., France, on the Bourbince, 48 m. W.N.W. of Mâcon. It is a junction of the Paris-Lyons rly. There are oil refineries, tanneries, and manufactures of tiles and ceramics. The most important building is the convent of the Visitation, where the nun Marguerite Marie Alacoque (1647-90), beatified 1864, claimed to have had visions of Jesus. Pop. (1954) 8,499.

**Parazoa.** Zoological term used to denote the sponges (*q.v.*) in contradistinction to the protozoa and the metazoa. These three groups of animals are usually given the status of sub-kingdoms of the animal world.

**Parcae.** In classical mythology, the Latin name for the Fates, goddesses who presided over the destiny of man. The Greeks called them Moirai. *See* Fates.

**Parcel Post.** Postal service for the conveyance of bulkier and heavier packages than are carried by the ordinary letter post. In the U.K. a parcel post was recommended by Rowland Hill in 1842, but the scheme was not put into operation until 1883. Headquarters for the new dept. were provided in 1887, and a system of coaches started in 1892. As a result of the Crown Proceedings Act, 1947, proceedings may be brought against the crown for loss or damage to any registered inland postal packet due to wrongful act, neglect, or default of the Post Office. The amount recoverable cannot exceed the market value of the packet or the sum covered by registration fee.

**Parchment.** Writing material made of the skins of animals, especially those of sheep and goats. It is supposed to have been first used as a substitute for papyrus in the 2nd century B.C., and derives its name from Pergamum, a city of Mysia, where it was first employed. In preparing parchment the hair or wool is first removed, and the skin is then steeped in lime, stretched on a framework, and scraped with a special knife. After being sprinkled with powdered chalk or lime, it is again rubbed to make the surface smooth. Coarse parchment is made of the skins of he-goats, calves, or asses. Parchment as writing material was superseded by paper.

**Pardo-Bazan, EMILIA, COUNT-ESS** (1852-1921). Spanish writer. Born at Corunna, Sept. 16, 1852, she was brought up amongst a brilliant society in Madrid. After marrying Don José Quiroga, she travelled in Europe, and divided her home-life between Madrid and Galicia, becoming an industrious writer, a leading spirit in the Spanish feminist movement, and an eloquent public speaker. Among her works are realistic novels, literary studies, and descriptions of her travels. She died May 12, 1921.

**Pardon.** Legal term for the forgiveness of a crime. It is in all countries the peculiar prerogative of the head of the state; although in constitutional countries he always acts upon the advice of his ministers. In Great Britain the king has the sole right of pardon and the home secretary advises him. He also has the legal right of pardon over the whole empire; but in practice he does not interfere in the dominions or colonies, where the exercise of the prerogative is left in the hands of the governor or governor-general. Remission of a sentence found to be mistaken is granted by a pardon. *See* Amnesty.

**Pardon.** Name given to popular religious gatherings and village feasts in Brittany. In rural districts, where the pardon is primarily devotional and associated with the quest of absolution, or cure of some bodily ill is the object of pilgrimage, the ceremonial begins overnight with vespers. Mass is said at 3 a.m., there is a procession in the afternoon, and sometimes one in the evening.

**Pardubice.** Town of Czechoslovakia, in Bohemia. It is 65 m. by rly. E. of Prague on the route to Brno, and stands on the Labe. Spirits, sugar, farm machines, flour, and timber products are manufactured. The ruined castle of Kunetz (1,000 ft.) crowns an isolated hill N. of the town. Pop. (1956 est.) 51,700.

**Paré, AMBROISE** (1510-90). A French surgeon. Born near Laval, Mayenne, he was apprenticed to a barber-surgeon.



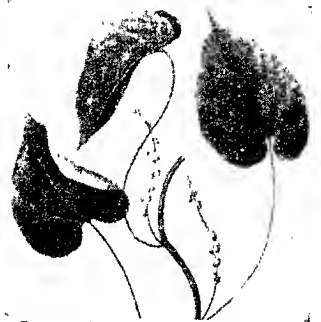
Ambroise Paré,  
French surgeon

In the army he gained such distinction that, although a Protestant, he became surgeon to Henry II and three other kings, Charles IX saving him at the massacre of St. Bartho-

lomew. He wrote on gun-shot wounds and anatomy, in *Anatomie Universelle*, 1550, and was the first to use ligatures for arteries after amputation, his rational treatment earning him the title of father of modern French surgery. Paré died Dec. 22, 1590.

**Paregoric.** Camphorated tincture of opium. It is used as a sedative in conditions associated with irritating cough.

**Pereira Brava** (*Chondrodendron tomentosum*). Climbing shrub of the family Menispermaceae. It



Pereira Brava. Foliage and sprays of, left, flowers, and, right, seeds

is a native of Brazil and the W. Indies. It has roundish leaves with the leaf-stalk attached to the middle, and silky on the underside. The flowers are greenish, in sprays, and the sexes separate. From the dried root a substance called pelosine is obtained, better known by the name of pareira brava.

**Parent** (Lat. *parere*, to bring forth). Primarily a father or mother. The word is also used for anything that begets something else, e.g. a parent plant. The complement of parent is child, and in all civilized countries a body of law deals with the duties of parents towards their children. *See* Children, Law about; Family.

**Pares, SIR BERNARD** (1867-1949). British scholar, born March 1, 1867. From Harrow he went to Trinity College, Cambridge. He specialised in Russian language, literature, and history, becoming professor in those subjects at Liverpool, 1908-17, and at London, 1919-36. He was director of the school of Slavonic and E. European studies, 1922-39, and lectured in American universities during the Second Great War. Pares, who was knighted in 1919, after service at the British embassy to Russia, published a *History of Russia*, 1926; *My Russian Memoirs*, 1931; *The Fall of the Russian Monarchy*, 1939. He died in New York, April 17, 1949.

**Pargasite.** Name sometimes given to green and greenish-blue varieties of hornblende (*q.v.*) found at Pargas, in Sweden.

**Parham.** Village of Sussex, England, 10 m. S.E. of Petworth. The church of S. Peter is noteworthy. Parham Park, with its deer and a famous heronry, is the property of Viscount Cowdray. The house was built in the time of Elizabeth, her arms and date, 1583, being on the wall.

**Parhelia** (Gr. *para*, beside; *helios*, sun). Name for the mock suns of a solar halo. *See* Mock Sun.

**Paria, GULF OF.** Almost enclosed arm of the sea in N.E. Venezuela. The island of Trinidad is separated at its N.W. corner from the peninsula of Paria on the mainland by the passage called the Dragon's Mouth, and at its S.W. by that of the Serpent's Mouth from the Orinoco delta. These passages, discovered and named by Columbus in 1498, connect the Gulf of Paria with the Atlantic Ocean. The gulf receives the Guanipa and the Manamo, and is 100 m. from Trinidad to its most westerly point in the prov. of Sucre.

In 1946 a British company began drilling for oil in the gulf; the first tests were carried out off the coast of Trinidad adjacent to the existing land wells, and were extended over an area of 150 sq. m. of the ocean bed.

**Pariah.** Term popularly applied to natives of India who have no caste, and hence figuratively to any social outcast. In strict usage, the Paraiyans, "drum-beaters," who number more than 2,000,000, most of them in Madras, are a low labouring caste with many sub-castes, and although they were traditionally classed as "untouchables" they actually rank higher than several true castes.

**Parian Ware.** Feldspar pottery fired at a moderate temperature. It is a pure white, marble-like substance, much used for figure work and vases.

**Parima, SIERRA.** South-western section of the Venezuelan Highlands. From Roraima, where British Guiana, Brazil, and Venezuela meet, an elevated region separates the tributaries of the Amazon from those of the Orinoco. This area is known first as the Sierra Pacaraima and in the S.W. as Sierra Parima. From the latter descend the Orinoco and its tributary the Ventuari.

**Pari-Mutuel.** French name for the method of backing horses by means of a machine known in the U.K. as a totalisator (*q.v.*).

**Parini, GIUSEPPE** (1729-99). Italian poet and satirist. Born at Bosisio, near Milan, May 22, 1729.

he became a priest in 1754, but is chiefly memorable for his satiric poem, *Il Giorno* (The Day), in four parts—Morning, Afternoon, Evening, and Night. The



Giuseppe Parini,  
Italian poet

first part, *Mattina*, 1763, created something of a sensation on its publication. Written in blank verse, the poem gives wonderful pictures of contemporary manners. Parini published about a score of odes, and in 1795 issued his *Epistle to Sylvia*. He died Aug. 15, 1799.

**Pari passu** (Lat., with equal pace). At the same time and rate.

**Paris.** Small genus of perennial herbs of the family Liliaceae. They are natives of Europe and temperate parts of Asia. They have creeping rootstocks, a simple stem, a single whorl of from four to nine leaves, and a solitary yellow-green flower, succeeded by a black berry. *See* Herb Paris.

**Paris.** In Greek legend, son of Priam and Hecuba. Soothsayers having foretold that Paris would bring calamity on Troy, the infant was exposed on Mount Ida, and

cared for by shepherds, but afterwards, becoming aware of his origin, was received again into the royal household. While still a shepherd on Ida he delivered his famous judgement. The goddess of strife, enraged at not having been invited to the marriage of Peleus and Thetis, had thrown a golden apple among the guests, inscribed "for the fairest."

Hera, Athena, and Aphrodītē each claiming the apple, Zeus ordered them to submit to the judgement of Paris. Hera promised Paris sovereignty, Athena, military glory, and Aphrodītē, the most beautiful woman in the world. Paris gave the apple to Aphrodītē, who caused Helen, wife of Menelaus of Sparta, to fall in love with Paris. He carried her off to Troy, and thus provoked the Trojan War. During the war Paris distinguished himself little. He was worsted in combat with Menelaus, and was only saved by being carried off the field by Aphrodītē. He is credited, however, with having caused the death of Achilles by shooting him with an arrow in the heel. On the taking of Troy, Paris was wounded by one of the poisoned arrows of Philoctētēs, and repaired to his long deserted wife, Oenōnē, a nymph of Mount Ida, who refused to heal him, and he returned to Troy to die. *See* Helen of Troy.

## PARIS: THE CITY AND ITS HISTORY

Nora Beloff, Paris Correspondent of The Observer

Further information concerning the French capital is given in articles on the city's famous buildings, e.g. Invalides; Louvre; Notre Dame. *See* pictures facing page 6353; *see also* France

Paris, the capital of France, is on the River Seine and is situated in the modern dept. of the Seine which is in the heart of the



Paris arms

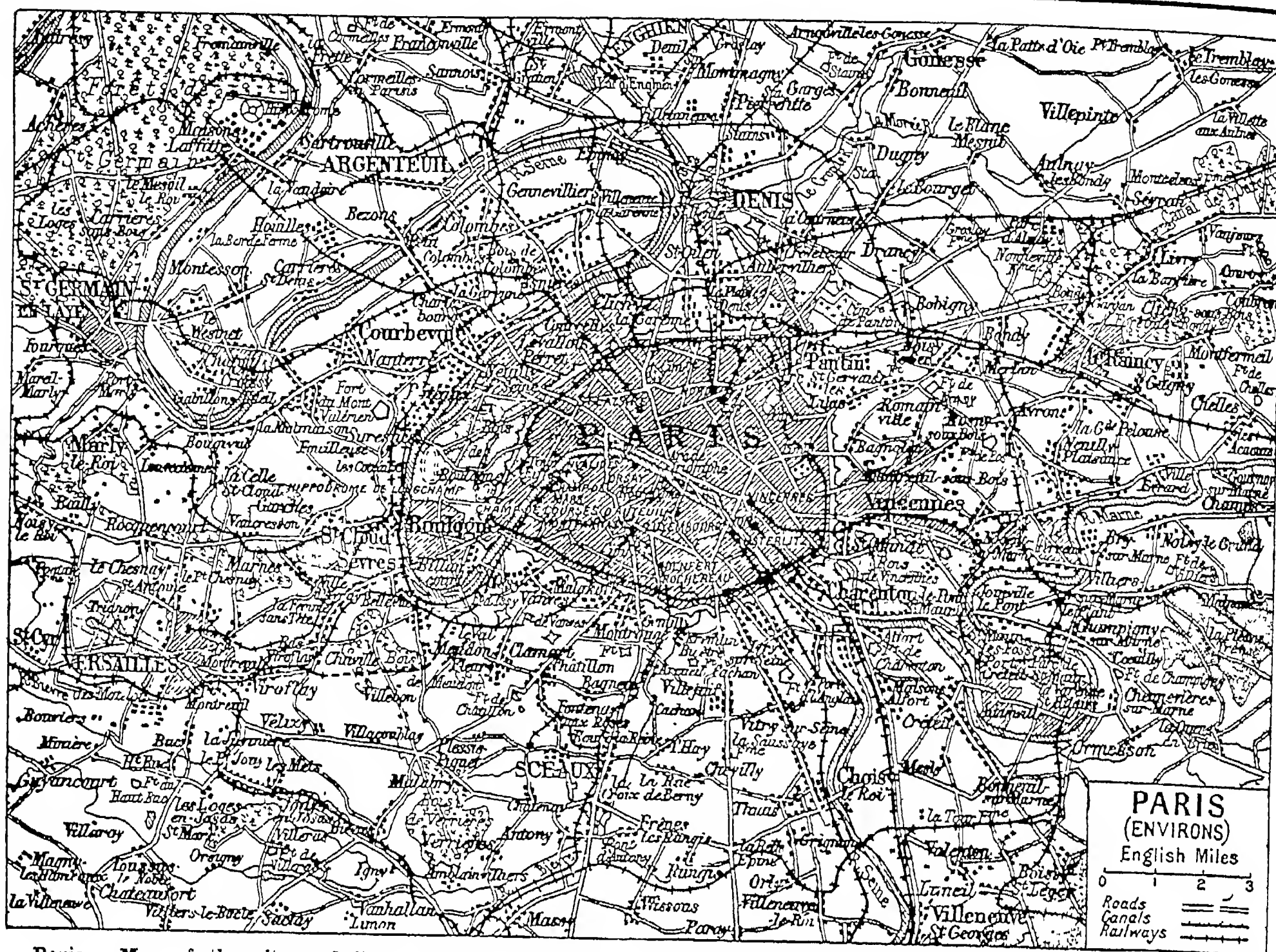
Paris proper extends over an area of 40 sq. m. of which one third is covered by buildings. Pop. (1954) of the city, 2,850,189; of the dept. of the Seine, which covers the city's outer suburbs 5,154,834 (including 186,164 foreigners). Thus almost one in eight of the French people lives in or around Paris, which is more densely populated than any other major European capital.

Thirty-two bridges span the river as it runs through Paris. Ridges of

hills rise on either side. On the right bank, the ridge starts at Bercy in the E. and runs to Passy in the W. Its highest point is the hill of Montmartre, 410 ft. high, from which the domes of the Neo-Byzantine basilica of the Sacré Coeur, built after the Franco-Prussian war, dominate the city. On the left bank the hills, which are lower, stretch from the Butte aux Cailles to Meudon and St. Cloud. The dominating monument is the 18th century church, secularised during the Revolution as "Le Panthéon," built on the hill of S. Geneviève which rises to 213 ft.

The city's original kernel, the Île de la Cité, still contains two of Paris's finest surviving monuments of Gothic architecture: the cathedral of Notre Dame (12th and 13th century) and La Sainte Chapelle (13th century). On the W. of the island stands the Palais de Justice (the law courts), most of it





Paris. Map of the city and its environs, showing the network of railways which connect the business centre with the suburbs

19th century imitation of the original buildings, of which the earliest were Roman. Survivals of the pre-revolutionary palace are the clock tower and the prison of the conciergerie. Paris's police h.q. in a vast squat edifice, the Préfecture de Police, replaced under Napoleon III the old narrow streets of the isle. The administrative centre, the Hôtel de Ville, is opposite the isle on the N. bank.

The city is divided roughly into equal quarters by the great highways intersecting at the Place du Chatelet, N. of the Île de la Cité. From E. to W. the following streets form a single artery: la rue du Faubourg Saint Antoine, rue Saint Antoine, rue de Rivoli, avenue des Champs Elysées, avenue de la Grande Armée. From N. to S. the artery runs through the boulevards: of Strasbourg, Sébastopol, the Palais de Justice (running across the isle), and Saint Michel, and then up the rue Denfert Rochereau and the avenue Général Leclerc (formerly avenue d'Orléans).

The central part of the city is bounded on the N. and on the S. by a series of main roads which form an oval. The N. curve starts at the Place de la Bastille, where a

column commemorates the fall of the royal fortress in 1789. It follows the large avenues known as the Grands Boulevards, centres of business, shopping, and amusements, leading to the early 19th century church of La Madeleine. Thence it turns down the Rue Royale, leading to La Place de la Concorde, and across the Concorde bridge to the national assembly, a much modified 18th century palace.

On the S. side, an inner arc starts from the Bastille and ends at the Concorde bridge, formed by two main roads: the boulevards Henri IV and St. Germain. As it crosses the river in the E. it touches the upstream point of the Île St. Louis which is joined by a bridge to its larger sister to the W., the Île de la Cité. An outer arc of boulevards to the S. runs over the crest of Montparnasse; a third ring encircles the city.

Approx. two-thirds of the city's surface is on the N. bank, bounded on E. and W. by two vast parks: Bois de Boulogne and Vincennes.

The E. of Paris, rising to the slopes of Montmartre and Ménilmontant, is older and poorer than the W. Its heart is the region known as the *marais* (marshland), which contains some of Paris's

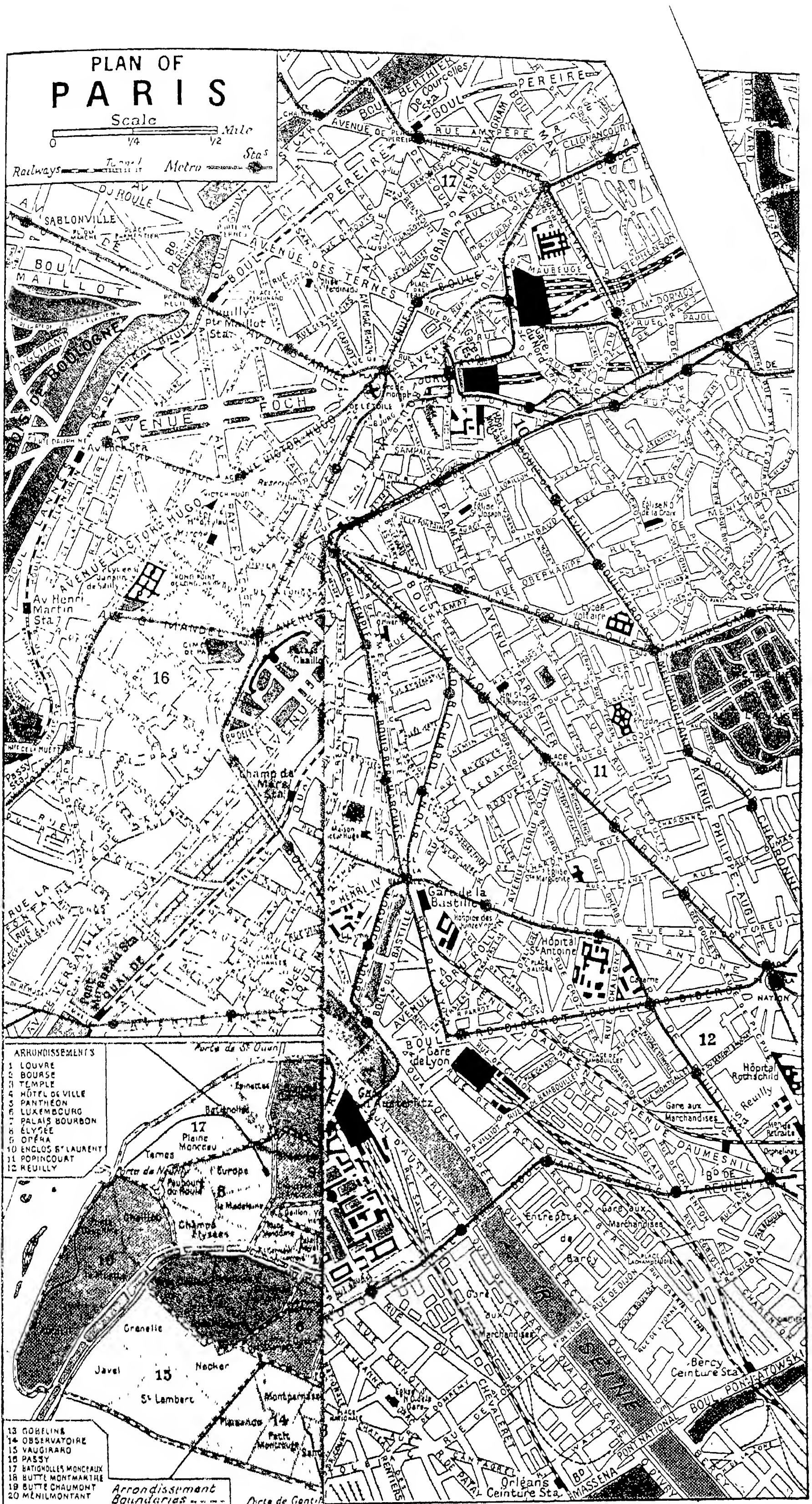
finest renaissance and 17th century buildings, and houses chiefly small traders and artisans. Westwards of the *marais* lies the business and commercial centre with the central markets (Les Halles), the stock exchange, the bank of France, and the great luxury avenues centring on the national state opera house.

Between this region and the river lies the Place du Louvre, now Paris's chief museum and, to the west, the gardens of the Tuileries.

W. of the Place de la Concorde lie the expensive residential quarters, the luxury hotels, the up-to-date theatres and museums, of which the central highway is the avenue des Champs Elysées stretching up to the Napoleonic Arc de Triomphe in the Place de l'Étoile, from which eleven other avenues radiate. One of these leads to the Place du Trocadéro, with a magnificent view towards the Eiffel Tower, and here another series of wide avenues converge.

The outer regions of N. Paris are mainly industrial, notably the N.E. In the working-class suburbs of Aubervilliers and St. Denis can be found the capital's worst slums and most revolutionary population, and also the abbey of St. Denis containing the royal tombs.





PARIS: PLAN OF THE ARRONDISSEMENTS





On the S. side of the river, the E. is also mainly popular and industrial. The two principal parks are the Jardin des Plantes, which contains one of Paris's zoological gardens, and the Jardin du Luxembourg, attached to the 17th century palace which houses the upper chamber of parliament, the *conseil de la république*. To its N. lies Montparnasse, the counterpart of Montmartre as a cosmopolitan intellectual and artistic centre.

Between the Luxembourg and the river lies the university and students' quarter centring round the Sorbonne, i.e. the central university building, La Faculté de Droit, École de Médecine, École des Beaux Arts. The student population, one of the largest in the world, can no longer find room within the restricted *quartier latin*. The more fortunate now reside at the Cité Universitaire beyond the Parc Montsouris, in a southern suburb, made available by the dismantling of the Paris fortifications after 1919.

Westwards of the university lies the fashionable 18th century residential quarter of the Faubourg St. Germain, where private palaces have been transformed into em-

bassies and public buildings. Many govt. offices are situated in the rue de Varennes, rue de Grenelle, and rue de l'Université. They stretch W. as far as the Invalides, near which, on the Quai d'Orsay, stands the present French Foreign office.

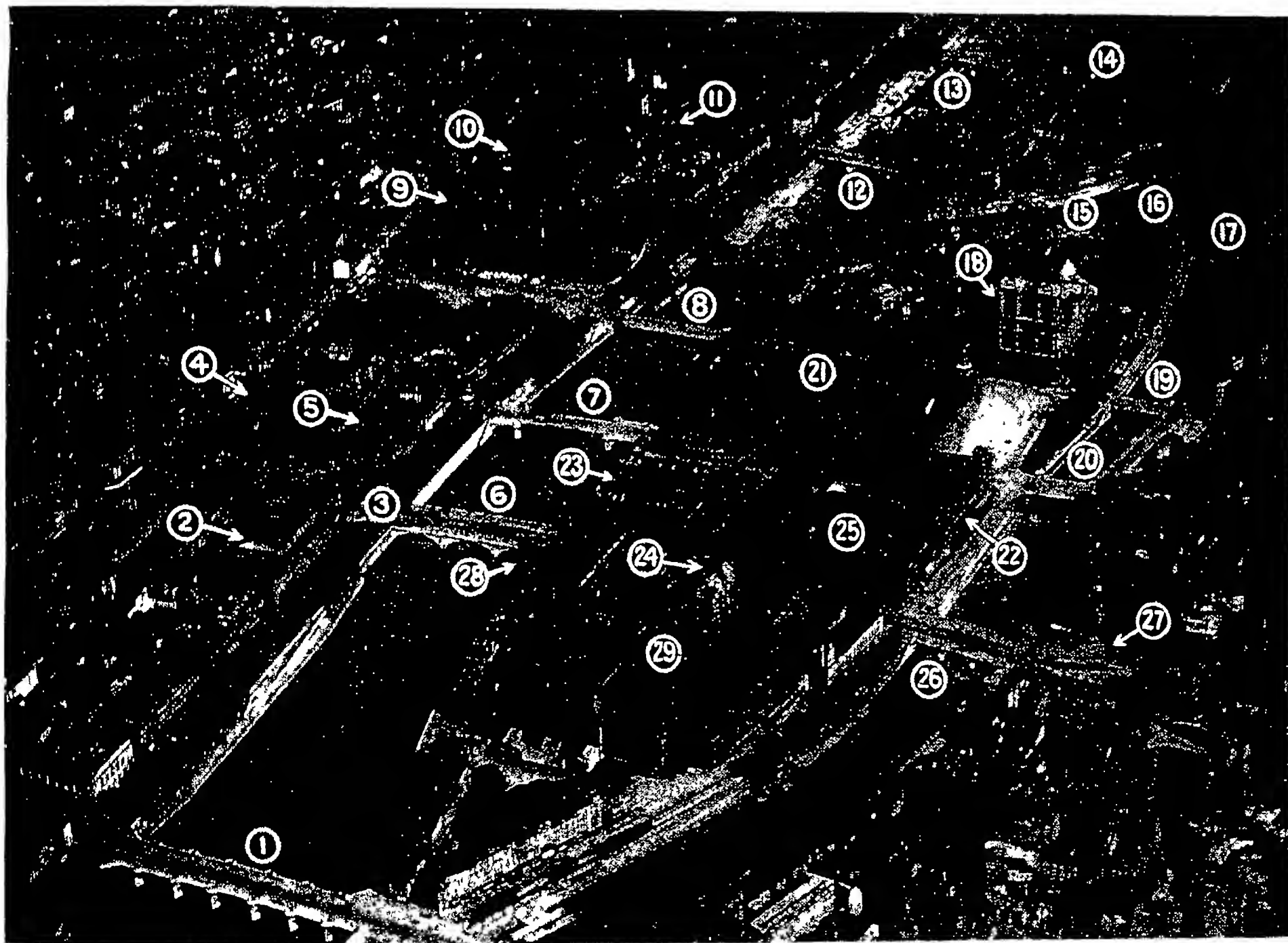
The Invalides, with a golden dome which is one of Paris's finest landmarks, is surrounded by vast open squares. Near it stands the École Militaire, between which and the river stands the steel Eiffel Tower, the world's first skyscraper, bestriding the Champs de Mars and looking across at the Place du Trocadéro. To the S. and W., working-class and industrial suburbs spread shapelessly outward.

The principal libraries of Paris are the Bibliothèque Nationale, Bibliothèque Municipale, Bibliothèque Mazarine. The principal museums are the Louvre (European art down to current times, Egyptian and Near Eastern arts); Musée Guimet (Far Eastern art); Cluny (medieval art); Carnavalet (history of Paris); Invalides (history of the army); Musée de l'Homme (ethnology); Musée de l'Art Français (casts of French sculpture); l'Orangerie, Le Jeu de Paume, temporary exhibitions.

**HISTORY.** When conquered by Julius Caesar in 53 B.C., Paris was the capital of a small Gaulish tribe living by shipping. Roman Paris spread from the Île de la Cité to the left bank but, by the end of the third century, barbarian onslaughts forced the population back into the easily defensible island. In 508, Clovis made Paris one of his residences and, three years later, S. Geneviève—the city's patron saint, to whom legend attributes the city's resistance to Attila—died there.

When the counts of Paris became kings of France in the ninth century, Paris's pre-eminence and her prosperity as a trading centre and port were assured. Her municipal arms, showing a sailing ship buffeted by the waves with the motto *Fluctuat nec mergitur* date from the 11th century.

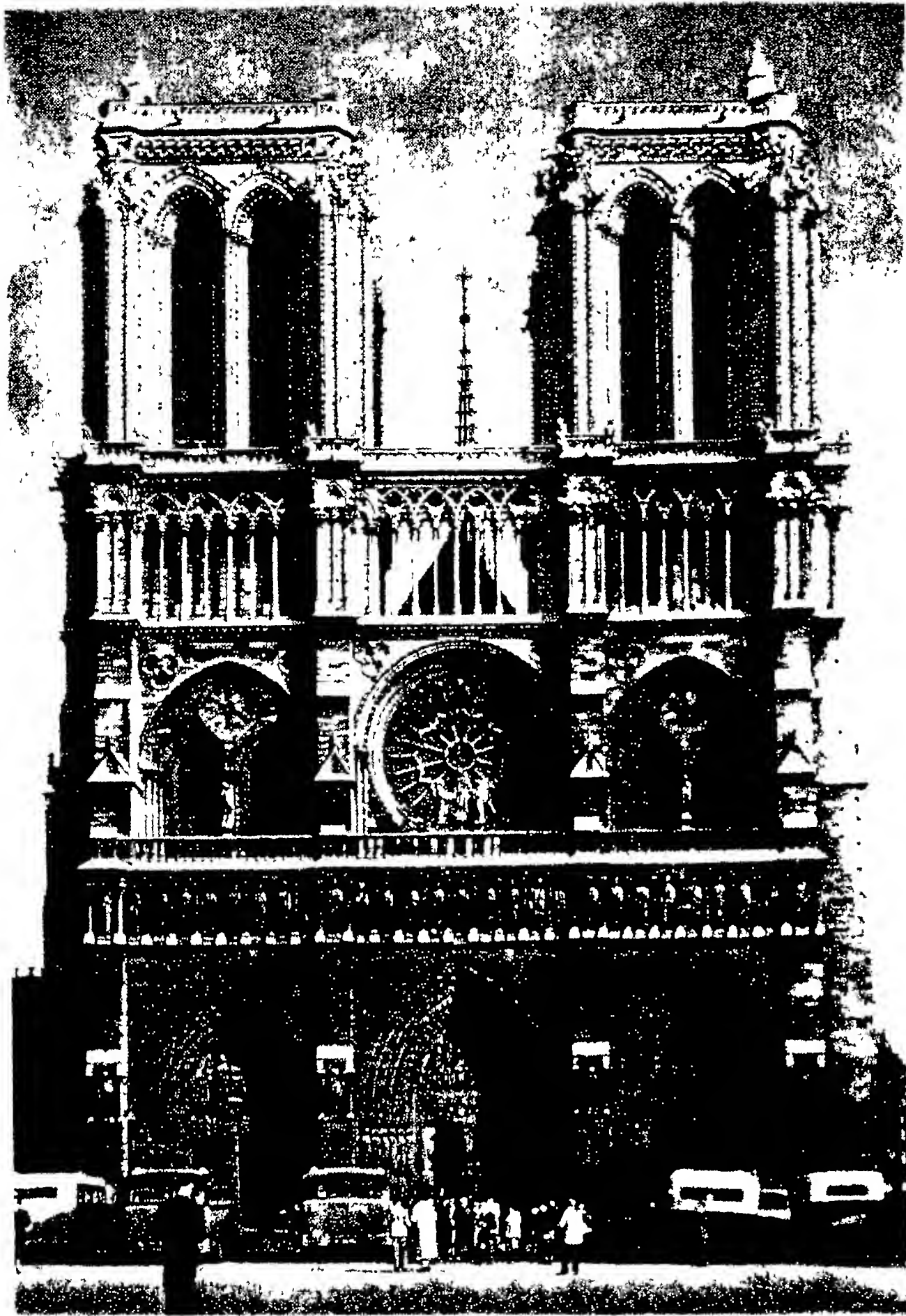
Under Louis VI, Philip Augustus, and Louis IX, Gothic architecture and art flowered. In the 13th century Paris, the oldest university of Europe with 20,000 students, had become incontestably the intellectual capital of the W. In the 14th century, despite English aggression, invasion, internal strife, and an abortive muni-



Paris. Air view of the central part of the city, looking east. 1. Pont-Neuf. 2. Théâtre du Châtelet. 3. Place du Châtelet. 4. Tour S.-Jacques. 5. Théâtre Sarah-Bernhardt. 6. Pont au Change. 7. Pont-Notre Dame. 8. Pont d'Arcole. 9. Hôtel-de-Ville. 10. Barracks. 11. Church of S.-Gervais. 12. Pont Louis-Philippe. 13. Pont-Marie. 14. Île S.-Louis. 15. Pont S.-Louis. 16. Morgue. 17. Pont de l'Archevêché. 18. Notre-Dame. 19. Pont au Double. 20. Petit-Pont. 21. Hôtel-Dieu. 22. Barracks. 23. Tribunal de Commerce. 24. Sainte Chapelle. 25. Préfecture de Police. 26. Pont S.-Michel. 27. Place S.-Michel. 28. Conciergerie. 29. Palais de Justice

By courtesy of Compagnie Aérienne Française, Paris





Paris. The west front of the venerable cathedral of Notre Dame

incipal revolt against royal authority by Étienne Marcel, Paris continued to expand and grow richer. In the 15th century the wars and the plague only partially interrupted the city's development; the 16th and early 17th centuries saw the building of the Tuileries, now destroyed, the oldest surviving parts of the Louvre, S. Étienne du Mont, S. Eustache, the Place Dauphiné, and the Place des Vosges.

In the 17th century Paris became indisputably the greatest capital of Europe. The Louvre was completed on a grandiose scale. The Invalides was built, as well as many churches, monasteries, hospitals, and buildings for social services, such as the Salpêtrière. During the same period of enlightened Bourbon despotism, Paris was better cleaned, and new security measures, including street lighting on moonless nights, were instituted. The expansion con-

tinued under Louis XV and included the construction of the Place de la Concorde and the Place Vendôme. The Concorde bridge was started in this reign, though completed only after the Revolution and embodying stones from the dismantled Bastille fortress so that Parisians could daily step on the symbol of royal tyranny. The Revolution cost Paris a number of medieval churches and chapels destroyed under the anticlerical reaction; but the expansion of the city was barely interrupted and attained new vigour under Napoleon. The Madeleine and the present national assembly, which balance each other on the N. and S. banks of the Seine, were either completed or transformed. The driving of wide streets through the city was initiated with the foundation of the rue de Rivoli and the Arc de Triomphe. Napoleon im-

proved the administration, safeguarded public peace, and centralised marketing in the newly constructed *halles*.

In the 19th century Paris burst its bounds and tripled its pop., becoming a first-class industrial centre. The radical transformation of the city under Napoleon III was stamped by the controversial personality of Baron Haussmann, prefect of the Seine, whose passion for symmetrical lines, light, air, and easily defensible broad straight roads prevailed over respect for antiquity and art. His wide avenues bordered with trees which stretch in straight lines have opened up the centre of the old city, and old buildings and winding ways were ruthlessly obliterated. The regions of the Étoile and the Opéra catered for the new tastes in luxury.

The worst destruction inflicted at a single blow in all Paris's history came at the fall of the second empire in the clash between the Paris Commune and the govt. of Thiers established at Versailles. In their retreat, the Communards burnt down the Palais de Justice, the palace of the Tuileries, the Cour des Comptes and the palace of the Legion of Honour. The Sainte Chapelle was saved because the fuse went out before the flame reached the powder barrel.

In the early decades of the Third Republic, world exhibitions bequeathed a series of disputed architectural assets which now mark the centre of the city: the Eiffel Tower, the Grand and Petit Palais (the former used for industrial, the latter for art, exhibitions), the bridge of Alexandre III, and, in 1937, the Palais de Chaillot—the new Trocadéro and the museum of modern art.

Paris suffered physically little during either of the Great Wars. Nevertheless the effects of the wars, the impoverishment of the nation as a whole, loss of population, and economic stagnation set their mark on Paris which, like the rest of the country, to some extent lived on past capital after the Second Great War was over. Inflation and social legislation blocking rents took profits out of building and, apart from a number of large shops, a few blocks of flats in the W. end of the city, and a number of churches built by subscription during the R.C. revival of the thirties, the expansion of Paris—for the first time in centuries—ceased: buildings fell into disrepair, the city outside the expensive luxury centre became shabby and overcrowded.

Paris is no longer the unchallenged capital of world art and thought, though art and thought are still vigorous, but she retains pre-eminence in the world of fashion and is still the tourists' favourite playground.

**ADMINISTRATION.** Royal, imperial, and republican governments have always been jealous of the city's power, and have contrived to leave the capital less self-government than any other French city. The special regime under which Paris is administered precludes the 20 arrondissements into which it is divided from electing their own mayors or conducting their own executive business. A municipal council of 80 votes the municipal budget, and elects its president who carries out the ceremonial functions of a mayor. But effective executive authority rests with the prefect of police and the prefect of the Seine who share the services between them.

The municipality owns the underground railway system which provides convenient and swift transport, although it is permanently overcrowded and badly ventilated, while its financial management and the fares are government-controlled. Lighting and gas are organized by the nationalised services responsible to the state, not the municipality.

The state also owns the national state opera house and the state theatres, the Comédie Française and the Théâtre Richelieu, most productions in which are French classics. Paris finds compensation for her limited power of self-government in the highly centralised national life of France, of which she remains the centre.

**Bibliography.** *Histoire générale de la Ville de Paris*, published by the municipality from 1866 onwards; *Bulletins de la Commission du Vieux Paris*, from 1894 onwards; *Histoire de Paris*, Lucien Dubech and Pierre d'Espèzel, 1926; *Vie d'une cité*, Marcel Poëte, 3 vols., 1924-42; *Paris*, Hilaire Belloc, 1902; *A Wanderer in Paris*, E. V. Lucas, 1909; *From a Paris Garret*, Richard le Gallienne, 1943; *Guide Bleu*: Paris, 1947.

**Nora Beloff**

**SECOND GREAT WAR.** On June 3, 1940, Paris was raided from the air by the Germans, most of the bombs falling on the western outskirts; and as the fighting drew nearer hordes of refugees poured into the city. The govt. left Paris for Tours on June 11, and three days later the capital was declared an open city, the French army retiring to the S. The Germans

entered Paris on the same day. Many of the Paris factories had been destroyed or damaged to prevent them from being used by the Germans, but German specialists soon restarted them on the production of war materials; and the city became the centre of German govt. of occupied France. Unemployment rose steadily; and the food and fuel situation became critical. By Aug., 1941, poor families were on the verge of famine, and a black market sent prices soaring.

In March, 1942, the R.A.F. began a series of raids on Paris factories producing war materials for the Germans, the Renault, Farman, Salomon, Matford, and Goodrich works all being severely damaged. During 1943 an increasing number of hostages were shot in an effort to curb attacks on German military personnel and acts of sabotage; but the underground movement gained strength as the tide of war turned.

#### The Liberation of 1944

As the Allies were approaching Paris from the W. in mid-Aug., 1944, orders by the Paris liberation committee and the national resistance council led to a general strike and a rising which assumed serious proportions on Aug. 19. Fighting was particularly heavy near the Hôtel de Ville, in the Île de la Cité, and between the Porte d'Orléans and the Cité Universitaire. The F.F.I. gained control of a number of the chief buildings, and during the 20th the Germans negotiated an armistice and made a feint of leaving the city. Returning in force, they were met by tanks of the French 2nd armoured div. which entered the Porte d'Orléans in the evening of Aug. 24 and made contact with the F.F.I. in the Île de la Cité. The Germans resisted desperately in some sectors, setting fire to the Grand Palais, the ministry of Marine, and the Hôtel Crillon. The main body of the 2nd armoured div., led by Gen. Leclerc, entered the city early on the 25th and was joined during the morning by other Allied detachments. The commander of the German garrison signed an armistice in the evening, and at 7 p.m. Gen. de Gaulle arrived at the Hôtel de Ville. By nightfall the city was completely liberated from the Germans. Next day de Gaulle with members of the exiled govt. and of the resistance council marched in public to a service of thanksgiving for the liberation of Paris at Notre Dame, where he was shot at by Vichy snipers both

inside and outside the cathedral. A new govt. was immediately formed by de Gaulle in Paris; and on Nov. 7 the consultative assembly, which had first met in Algiers in Nov., 1943, met in Paris at the Luxembourg palace. Paris was once more the centre of govt. of the French empire.

**Paris.** City of Texas, U.S.A. The co. seat of Lamar co., it lies 97 m. N.E. of Dallas and 15 m. S. of the Red R. Served by rlys., it is also the headquarters of a long-distance commercial lorry service. Industries include cotton ginning, flour milling, and making cottonseed oil, furniture, and bricks. Settled in 1874, Paris became a city in 1905. Pop. (1950) 21,643.

**Paris, BRUNO PAULIN GASTON** (1839-1903). French philologist. Born at Avenay, Aug. 9, 1839, son of the philologist Paulin Paris (1800-81), he became in 1895 director of the Collège de France, where he had succeeded his father as professor. His works and numerous contributions to periodicals deal chiefly with medieval French literature, of which he wrote a history. His biography of Villon is regarded by some as his best work. He died in Paris, March 6, 1903.

**Paris, LOUIS PHILIPPE ALBERT.** COUNT OF (1838-94). French prince. The grandson of Louis Philippe, he was born Aug. 24, 1838, and became the king's heir in 1842, retaining this position until the latter was deposed in 1848. He lived with his mother in Germany and England, and saw something of the American Civil War. He returned to France in 1871, remaining there until 1886, when he and his family were again exiled. He died Sept. 8, 1894, leaving two sons, known as the dukes of Orléans and Montpensier. He wrote a *History of the American Civil War*, 8 vols., 1874-75. See Bourbon; Orléans.

**PARIS, DECLARATION OF.** Term applied to four articles for the regulation of maritime warfare drawn up and agreed to by the plenipotentiaries of the powers who concluded in Paris in 1856 the treaty of peace after the Crimean War. The four articles are; (1) privateering is and remains abolished; (2) the neutral flag covers enemy goods, with the exception of contraband of war; (3) neutral goods, with the exception of contraband of war, are not liable to capture under the enemy flag; (4) blockades to be binding must be effective, i.e. the blockading force must be able to prevent virtually all ingress to and egress from the enemy coast.



The government of the U.S.A. was asked to subscribe, but refused. Spain and Venezuela also refused to subscribe. During the war between the U.S.A. and Spain, however, both nations agreed to conduct their maritime warfare in accordance with the principles of the Declaration. See Blockade.

**Paris, TREATIES OF.** Various international treaties signed in Paris. Used without qualification, the term generally refers to:

(1) First treaty of Paris, concluded May 30, 1814, by the Allies and France after the abdication of Napoleon I. France reverted generally to the frontier of 1790, but acquired territory round Mons and Philippeville and a portion of Savoy. Most of her colonies were restored, but Great Britain gained Mauritius, Seychelles, and islands in the West Indies, and the part of San Domingo formerly Spanish was returned to Spain. The treaty awarded Malta to Great Britain. A secret treaty signed at the same time bound France to the provisions of the congress of Vienna (*q.v.*).

(2) Second treaty of Paris, concluded between the Allies and France, Nov. 20, 1815, after the final overthrow of Napoleon. France lost most of her acquisitions under the former agreement and had to pay an indemnity of £28,000,000.

Also signed at Paris were:

(3) Treaty of Feb. 10, 1763, between Great Britain, France, and Spain, at the close of the Seven Years' War. France surrendered to Great Britain all her American possessions except Louisiana, though retaining fishing rights off Newfoundland. She regained Guadeloupe, Martinique, and Santa Lucia, her rival keeping Tobago, Dominica, St. Vincent, and Grenada. Territorial adjustments were made in Africa and India. Spain recovered the Philippines and Havana, but ceded Florida to Great Britain. (See Hubertusburg, Treaty of.)

(4) Treaty of March 30, 1856, between France, Great Britain, Russia, Turkey, and Sardinia, after the Crimean War. The Moldavian frontier was rectified, Russia lost control of the mouths of the Danube, and merchant ships were allowed complete freedom of entrance to the Black Sea. A limit was placed on Russian and Turkish naval forces.

(5) The peace treaties signed between the Allied and associated powers on the one hand and Italy, Rumania, Hungary, Bulgaria, and Finland on the other, Feb. 10,

1947. All ex-enemy states except Finland presented notes of protest concurrently with signing. The terms are described in the articles on the countries concerned.

**Paris Basin.** Term applied by geologists and geographers to designate the general dip of the rocks downwards towards Paris from the edges of a roughly circular area which extends from the Ardennes to the Auvergne, and the Vosges to the Brittany Highlands. It embraces most of the Seine valley and part of that of the Loire. The downwarping occurred during the Tertiary period, and the basin is similar in origin to that of the London Basin.

**Parish** (Gr. *paroikia*, neighbourhood, from *para*, near; *oikos*, house). District committed to the care of one parson or minister having permanent cure of souls, known as the incumbent. The origin of the division of the country into parishes has been much disputed, some writers giving it an ecclesiastical ancestry, while others assert that the ecclesiastical parish system was based upon an earlier division for civil purposes. Parishes appear to have become general about the 9th or 10th century, possibly as the result of mission work radiating from the principal or bishop's church.

For civil purposes the parish is the smallest area, so far as local government is concerned. Its organization varies according as it is a rural or an urban parish. Most rural parishes have a parish council, its place in others being taken by the parish meeting.

The urban parish ceased to be an organ of local government in 1933. In ecclesiastical matters the vestry was formerly the council of the parish, but all its functions except those relating to the affairs of the Church and to charities have been transferred to parochial church councils in rural areas and to borough councils and urban district councils in other areas. In Scotland the parish ceased to exist as a civil administrative area in 1929. In ecclesiastical matters it is under the control of the general assembly. See Local Government.

**Parish Council.** Body which administers civil affairs of rural parishes which had such a council on June 1, 1934, when the Local Government Act, 1933, came into force, or in which a council has been established by order of the county council. The latter must establish a council in every rural parish with a pop. of 300 and also in parishes with a pop. between

200 and 300 if the parish meeting, consisting of the local government electors, so resolves. There are between 5 and 15 members elected every three years.

**Parish Register.** Register kept by parochial clergy for recording baptisms, marriages, and burials. It belongs legally to the parochial clergy, and is generally kept in the parish church. Copies of all entries are forwarded to the registrar-general. Parish registers began to be kept in England about the middle of the 16th century, but certainly existed in France 200 years earlier. Similar records were kept in ancient Athens and Rome. Before the 18th century it was usual for the entries to contain notes and comments, which provide much material for students of the period; but they developed into bare records, of merely legal interest. There was no law compelling the preservation of parish registers until 1812. Parish registers are to be distinguished from the records of births, marriages, and deaths kept by the registrar-general since 1836. The Parish Register is the title of a poem by Crabbe, 1807.

**Park.** Literally, an enclosed space. The word connotes either enclosed land round a large house, e.g. Chatsworth, Knole; or an open space set aside for the use of the public. The idea in both is that the land has been reserved.

National Parks (*q.v.*) are areas of country invested in national ownership and administered by the state for the enjoyment of the public.

A military park is an enclosed space for the storage of supplies, guns, etc.; also the actual material in such a space.

A car park is a place on public or private property on which vehicles may be left unattended. Local authorities in the U.K. may authorise the use of any part of a street as a parking place so long as this does not cause a nuisance. The liability of owners of a parking place depends on the terms of any contract made, but in general the owners merely allow drivers to leave vehicles at their own risk on the property. Public parking places are provided in many towns by local authorities. Some are merely marked off at the sides or middle of the road by white lines. The position of a car park is generally marked by a blue disk with a white P in the centre. After the Second Great War, London and other cities used as car parks some sites of buildings destroyed by German bombs.

**Park, Sir Keith Rodney** (b.1892). N.Z. airman. Educated at Auckland, and Dunedin, N.Z., he served

with the R.F.C. and R.A.F. during the First Great War, becoming a leading air "ace." From 1919 onwards he held various staff appointments. In 1940



Sir Keith Park,  
British airman

he organised fighter squadrons to protect Holland and Belgium and to cover the evacuation of Allied troops. When daylight attacks on the S. and S.E. coasts of England began in the summer of 1940. Park was in command of No. 11 fighter group, which bore the brunt of the air fighting in the battle of Britain. Later he was in charge of the R.A.F. in Egypt, and in 1942 took over the Malta Command, directing the island's defensive and offensive operations. In 1944 he became c.-in-c. Middle East, and in 1945-46 was Allied air c.-in-c. S.E. Asia Command. An air chief marshal, he was knighted, 1942.

**Park, Mungo** (1771-1806). British explorer. Born at Foulshiels, Selkirkshire, Sept. 20, 1771,

he became a surgeon and in that capacity went on a voyage to India in the service of the East India Company in 1792. In 1795 he was employed by the African as-



Mungo Park,  
British explorer

sociation to explore the Niger, and proceeded to Gambia, where, crossing the Senegal, he followed the Niger to within a short distance of Timbuktu.

His adventures, described in his *Travels in the Interior of Africa*, 1799, awakened great interest, and he was commissioned by the government to make another expedition in 1805. The attempt was disastrous. He had started with Anderson, his brother-in-law, and 45 British soldiers. Of this party only three soldiers were left when, after a canoe voyage of over 1,000 m., he reached the lower Niger. The end came near Yuri, where the canoe was upset and Park and his companions were drowned. One native rower escaped, from whom the facts were learned in 1812. *Consult* his *Journal*

of a Mission to the Interior, 1815; *Niger: The Life of M.P.*, L. G. Gibbon, 1934.

**Park Avenue.** Street of New York City. One of the main and fashionable thoroughfares of Manhattan, it continues Fourth Avenue above 32nd St. to the Grand Central terminus and thence from 45th St. to the Harlem river. It is lined with expensive blocks of flats in the middle section.

**Parker, Sir Gilbert** (1862-1932). British writer. Born at Addington, Ont., Canada, Nov. 23, 1862, he became a journalist. He drew on memories of the land of his birth for many novels, the best-known of which included *Pierre and his People*, 1892; *When Valmond Came to Pontiac*, 1895; *The Seats of the Mighty* (dramatised by its author), 1896; *Northern Lights*, 1909; *The Judgment House*, 1913; *There is a Man*, 1927. His autobiography, *Tarboe*, appeared in 1927. He was Conservative M.P. for Gravesend, 1900-18. Knighted in 1902, he was created a baronet in 1915. He died July 8, 1932.



Sir Gilbert Parker  
British writer

**Parker, Sir Hyde** (1739-1807). British sailor. He was commissioned in the navy in 1758. He was knighted, 1779, for services in the American War of Independence. Made a rear-admiral in 1793, in 1801 he commanded the Baltic fleet against the Northern Confederation, with Nelson as second in command. The victory of the latter at Copenhagen, where Nelson put his blind eye to the telescope that he might not see Parker's signals to retire, led to Parker's recall. He died March 16, 1807.

**Parker, Joseph** (1830-1902). British divine. The son of a stonemason, he was born at Hexham, April 9, 1830.



Joseph Parker,  
British divine

In 1852 he entered the Congregational ministry. After being in London at Moorfields for a short time, he went in 1853 to Banbury, and in 1858 to Manchester. In 1869 the independent church in the Poultry, London, invited him to become its minister, and while there he secured the erection of the City Temple, Hol-

born Viaduct, opened in 1874. Here Parker was one of the most popular preachers of the day. He died Nov. 28, 1902. He published a large number of books, including *The People's Bible*, 25 vols., 1885-95; and *The Paraclete*, 1874. *Consult* *My Life and Teaching*, J. Parker, 1889; *A Preacher's Life*, J. Parker, 1899.

**Parker, Louis Napoleon** (1852-1944). British dramatist and pageant-master. The son of an American father and English mother, he was born in Calvados, France, Oct. 21, 1852. After studying at the Royal Academy of Music, he became director of music at Sherborne school, 1873-92. The pageant which he organized at Sherborne in 1905 was followed by other equally successful spectacles, e.g. *Warwick*, 1906; *Bury St. Edmunds*, 1907; *Dover*, 1908; *Colchester and York*, 1909. As a dramatist he achieved fame with *Drake*, produced at His Majesty's 1912. A skilful adapter and translator, he prepared for the English stage *Beauty and the Barge* (from *The Lady of the Barge*, by W. W. Jacobs), *David Copperfield*, *Rosmersholm*, and *L'Aiglon*. He died Sept. 21, 1944.

**Parker, Matthew** (1504-75). English prelate. Born at Norwich, Aug. 6, 1504, the son of a cloth presser, he was educated at Corpus Christi College, Cambridge, where he associated with Latimer and other reformers. Ordained in 1527, he became chaplain to Anne Boleyn in 1535, and in 1537 to Henry VIII. In 1544 he was appointed master of his college, and was twice elected vice-chancellor of Cambridge university. He married the daughter of Robert Harlestone, an ardent reformer, in 1546, supported Northumberland against Mary, was in danger of his life throughout her reign, and had to remain in concealment. Elizabeth on her accession in 1558 made him archbishop of Canterbury. Parker took a leading part in translating and publishing the *Bishop's Bible*, 1563-68, made a collection of literary treasures, and presented priceless MSS. to Corpus Christi library. He opposed Puritanism with moderate success. He died May 17, 1575.



Matthew Parker,  
English prelate

**Parker, Sir Peter** (1721-1811). British sailor. Born in Ireland, son of Rear-Admiral Christopher



Parker (d. 1765), he went to sea young, and after serving in the W. Indies saw action at Toulon, 1744. In 1759, commanding the Bristol, he assisted in the reduction of Guadeloupe, and in 1761 of Belle-Ile. He was given command of a squadron and sent to N. America, 1775. Disastrous failure to force the entrance to Charleston Harbour cast him under a cloud, but in 1777 he was made commander-in-chief of Jamaica. In 1782 he returned to England, and was made a baronet. He died Dec. 21, 1811.

**Parker Dam.** Dam across the Colorado river, U.S.A. Situated below Boulder, it diverts the river water into the Colorado aqueduct for Los Angeles. Completed in 1938, the Parker Dam is of concrete and has a maximum height of 320 ft., maximum width 800 ft. It is unique in having 235 ft. of its height below the river bed.

**Parkersburg.** City of West Virginia, U.S.A., the co. seat of Wood co. It stands at the confluence of the Little Kanawha and Ohio rivers, 65 m. N. of Charleston, and is served by the Baltimore and Ohio and other rlys., steamers, and airport. In the Ohio, 2 m. below the city, is Blennerhasset Island, associated with Aaron Burr's abortive conspiracy to establish an "empire" in the south-west. There are gas and oil wells, farms, and mineral springs in the district, coal and clay being produced. Industrial establishments include foundries, oil refineries, lumber and flour mills, rly. shops, and manufactures of iron and steel, clothing, porcelain. Settled 1773, incorporated 1820, Parkersburg became a city 1863. Pop. (1950) 29,684.

**Parkes.** Town of New South Wales, Australia, in Ashburnham co. It is 300 m. by rly. W.N.W. of Sydney, and is a centre of fruit and wheat growing and gold mining. Pop. (1954) 7,973.

**Parkes, SIR HARRY SMITH** (1828-85). A British diplomatist, born Feb. 24, 1828. He was the son of a Walsall ironmaster, and went to King Edward's grammar school, Birmingham. As a boy of 13 he went out to China and a year later became an official interpreter. He was one of the principal agents in negotiating a treaty with Siam in 1855. After the capture of Canton by the British in 1857 Parkes was one of three commissioners placed in charge, and though the Chinese set a price on his head he not only kept order in the city, but also explored a large hostile district. After the Peiho

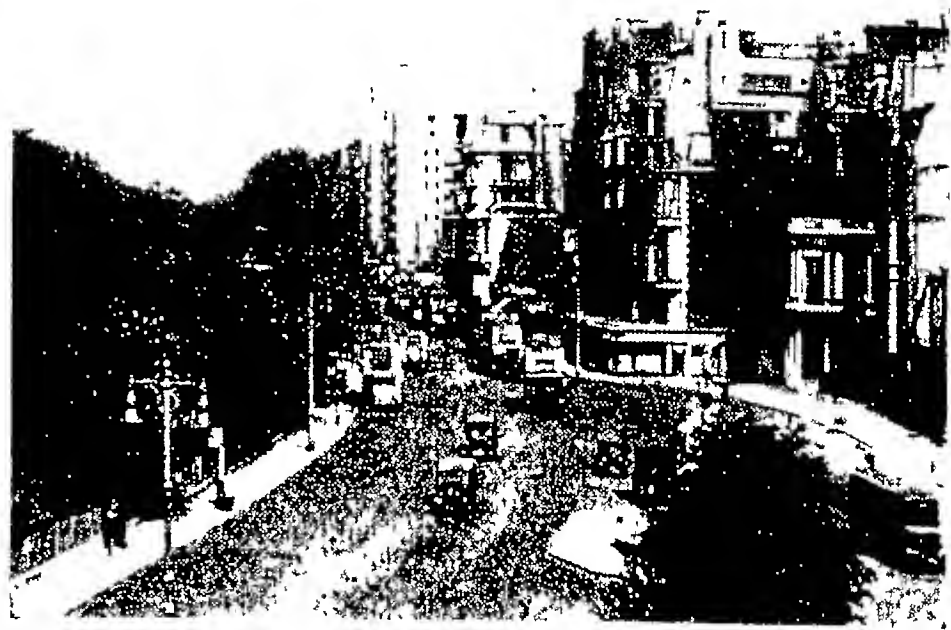
disaster, 1859, he secured Kowloon and Chusan as army bases, and took part in the Peking campaign. His party was treacherously arrested under a flag of truce and tortured, but Parkes was eventually released and was present at the capture of Peking. Knighted in 1862 and appointed minister to Japan in 1865, he succeeded in enforcing the ratification of the 1858 treaty, and remained there 18 years except for periods of leave. Transferred to China, he died there March 22, 1885.

**Parkes, SIR HENRY** (1815-96). Australian statesman. Born at Stoneleigh, Warwickshire, May 27, 1815, he emigrated to Australia at 24 and settled in Sydney. Entering political journalism, he started *The Empire* newspaper, 1849, and agitated strongly against the importation of convicts and in favour of colonial self-government. Member of the legislative council in 1858, he was colonial secretary 1866-68, and in 1872 became prime minister on the free imports platform. Defeated in 1875, he returned to office for a few months in 1877, in which year he was knighted. He was prime minister again 1878-83 and 1887-91. A consistent advocate of free trade, he was also the principal author of Australian federation. He died April 27, 1896. *Consult* *Life and Work*, T. Bavin, 1941.

**Parkhurst.** An English civil prison. Situated about 1 m. N. of Newport, Isle of Wight, it consists of two separate prisons. It accommodates ordinary prisoners serving sentences of over 3 years and men under sentence of preventive detention. Prisoners requiring hospital treatment are usually sent there.

**Park Lane.** London thoroughfare. It runs N.W. from Piccadilly to Marble Arch and marks the W. boundary of Mayfair. At its junction with Hamilton Place a "poets'" fountain by Thornycroft was erected in 1875 and demolished in 1949. From here Hyde Park is on its W. side. A lane leading from semi-rural Piccadilly to Tyburn at the beginning of the 18th century, Park Lane became a fashionable place of residence; during the 19th and early 20th

centuries palatial mansions were erected, notably Londonderry House, 1850; Dorchester House, 1851-53; Dudley House, Brook House, Aldford House, and Stanhope House. At No. 29 Disraeli lived 1839-72. Before the First Great War its character was plutocratic rather than aristocratic. Grosvenor House and Dorchester House were later demolished and replaced by hotels, flats, and shops.



Park Lane, London. Looking N.W. along this noted Mayfair thoroughfare, with Hyde Park on the left

During the Second Great War German bombs wrecked a number of the bow-fronted houses that faced Hyde Park.

**Parkman, FRANCIS** (1823-93). American historian. Born at Boston, Sept. 16, 1823, he passed most of his youth in roaming about the woods, and had visited Italy before he took his degree at Harvard in 1844. The idea of writing the story of America's past gripped him early, and to study primitive life he spent some time in the wild west, learning much about the Indians. Despite an affection of the eyes which obliged him to live in a darkened room, he produced classic books: *The Conspiracy of Pontiac*, 1851; *England and France in the New World*, published in sections, each with a separate title, 1865-92. Parkman died Nov. 8, 1893. *Consult* *Journals*, ed. M. Loade, 2 vols., 1949; *Lives*, C. H. Farnham, 1901; H. D. Sedgwick, 1904.

**Park Royal.** Dist. of Middlesex, England. It has Willesden to E.N.E. and Ealing to S.W., and is well served by rly. and bus, Western Avenue running through it. The district was laid out as a permanent showground of the Royal Agricultural Society of England, but after 1905 the estate was split up into building sites. Here are Guinness's London brewery and other industrial works.

**Parkstone.** District of Dorset, England, forming a N.E. suburb of Poole. Lying between that town

and Bournemouth, it has a rly. station. Owing to the fine woods around it and other attractions, it is much visited during summer. Pop. 11,618.

**Parlement.** Former French court of justice. The name is identical with that of parliament, although now used in a different sense. It was first given, as in England, to a meeting for discussion, but soon the parlement of France developed into a court of justice, not a legislative assembly.

The early French kings heard disputes in person; in this work they were assisted by their vassals, and about the time of S. Louis this *curia regis* became definitely a court of law, not unlike the English court of exchequer. It sat permanently in Paris, and was therefore called the parlement of Paris; its active members became a class of regular professional judges, both clergy and laymen; the king ceased to preside over its sessions, giving way to a president. It was the court to which came cases about the royal estates, and appeals from the decisions of the king's baillis and seneschals. This process was completed before 1500, but soon the business of the parlement had increased so much that it was divided into several sections. It was also a court of which theoretically all the peers of France were members.

On this model, parlements were established in the provinces; at the Revolution they existed at

Rouen, Rennes, Grenoble, Dijon, Bordeaux, Nancy, Besançon, Toulouse, and elsewhere. These were courts of appeal for the various provinces, having each a retinue of lawyers, including a president, councillors, and permanent officials of lower rank. The offices passed from father to son, or were sold openly to the highest bidder. A

parlement could make regulations for the government of the province, and before coming into force all laws were registered by it. The parlements were most powerful during the 18th century, when they were the only remaining check on the royal authority. They were abolished at the time of the Revolution, and never revived.

## PARLIAMENT: HISTORY & PROCEDURE

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*In addition to this historical sketch, which concludes with a section on parliamentary procedure, there are articles on Commons, House of Lords, House of. See Address; Division; King's Speech, etc.; also Government; Politics; Representation; Vote*

Parliament originally meant a parley, and nothing more. The word is found in French early in the 12th century, and its use became common in England during the 13th, to denote any kind of conference. Its official use was restricted to specially full meetings of the king's council summoned four times a year, i.e. in every legal term, to consider public affairs and particularly legal cases which were especially difficult or required a novel remedy. To official gatherings of this kind the word was long restricted in both France and Scotland, and even in England a "parliament of the council" was described as a full parliament in the 14th century, even though no specially summoned peers were present, and no generally summoned representatives of the

commons. The really original work of Edward I. which was ultimately to distinguish the constitutional system of England from those of France and Scotland, was that, instead of keeping these parliaments of the council separate from the representative estates, he joined the latter to the former, and thus formed the Parliament which is at once a "high court"—indeed, the highest law court in the land—and also a popularly elected legislative and taxing body.

In both its aspects Parliament developed out of feudal ideas and conditions. Representation, unknown to the classical world, had been familiar in Anglo-Saxon times since the days when the reeve and four "best" men of the town began to attend the shire-moot. But the "best" men were the



Parliament. The Houses of Parliament, seat of British legislature, on the banks of the Thames, at Westminster, London. On the extreme left are the towers of Westminster Abbey, next are the Victoria Tower and Central Tower, and on the right the Clock Tower containing Big Ben



possessors of the best tenements, and the obligation of attendance was often attached as a duty to the particular holding. After the Norman Conquest the rule was that if the lord or his steward chose to attend, his attendance excused the rest of the community; but if neither proposed to attend, then the township must send its reeve and four best men. The obligation lay on each community as a whole, and the boon of representation consisted not in the fact that the few had to attend, but in the fact that all the rest were thus enabled to stay at home. The same principle was extended from the shire-courts to the king's high court at Westminster. The greatest tenants-in-chief, whether bishops or barons, were required to come by individual writs of summons; they enjoyed no representation. But the lesser tenants-in-chief and the cities and boroughs were excused on condition of producing two representatives of each shire, city, and borough, to do their duty for them; and the lower clergy were offered the same advantage.

The business of these representatives was judicial and financial; politics could only come later when the people had acquired some political knowledge and capacity. Work of this kind had long been done on the representative principle in the shire-courts, and the summons to Westminster was due to the increasing superiority of the justice administered in the king's court to that which was administered in the local popular or feudal courts. Henry II had created a highly expert *curia regis*, with which no other court could compete, either in respect of competence or of power; and in spite of the reactionary attempts of the barons to limit by means of Magna Carta the jurisdiction of the king's court, it developed rapidly during the reign of Henry III.

#### Hearing of Pleas

New writs were devised to remedy abuses; no court could use them but the king's, and this meant that an increasing number of suitors were continually being attracted to Westminster Hall, where three committees of the king's court, common pleas, exchequer, and king's bench, were gradually formed to deal with their petitions. A parliament was properly a joint session of these committees, with the non-judicial members of the council, and its preliminary was a proclamation that all who had petitions to present should present them by a certain date; receivers and triers of petitions were then appointed, and the pleas were

heard. A further advantage of a parliament was that no fees were charged for a petition.

Parliaments of this sort were held before the business of representation was organized by means of the writs to the sheriffs and the regular return of elected representatives from the shires and boroughs; and agents of the shires and boroughs had often presented their legal business at Westminster. Simon de Montfort's parliament of 1265 was an extension and application of this kind of assembly to the political purpose of placing the royal authority in commission. Its defect was that it consisted solely of his partisans, and there is little evidence that this gathering had either the means or the will to perform the legal functions which long continued to be the principal business of parliament. The regularisation of this legal business was largely due to financial reasons. So long as land was the only source of direct taxation, only the chief landholders had been consulted.

#### Taxation and Representation

But as the financial necessities of government increased, the basis of taxation was extended to personal property and to a larger section of the community; and taxation became the mother of representation. At first the king sent his agents round to the shires and boroughs to negotiate locally for grants; but it was soon found more expeditious and profitable to summon agents of the localities to make their grants in the king's presence at Westminster. Thus representatives were summoned to attend the parliaments of the council (*a*) to make grants of taxation and (*b*) to present petitions for legal redress. They were not asked to legislate. What legislation there was took the form of ordinances in council, devised by the judges and enacted by the crown, and Edward I himself enacted most of his legislation before he summoned his model parliament of 1295.

These parliaments were held in a single chamber, at the upper end of which sat the king on his throne. At his feet sat the chancellor on one of the four wooolsacks, arranged in a square on which sat the council, the judges of the king's bench on the chancellor's right, and the judges of common pleas on his left; opposite the chancellor sat the masters in chancery. The council was the original core of parliament, and all the other elements were accretions. Outside this inner square of councillors the bishops and abbots sat on benches running down from the right of the

throne, and the earls and barons on its left. At the lower end of the chamber beyond the bar stood the Commons with the Speaker at their head, on the rare and solemn occasions on which they appeared in parliament.

The business was opened by the chancellor or some other councillor, who explained the cause of summons and the royal needs; and the various estates (the notion that there were only three is a misleading fiction) separated to deliberate on the answers they should make. The lower clergy withdrew to their own convocation, and in the 14th century ceased altogether to come to parliament. The knights of the shires and burgesses at first withdrew to separate rooms, but before the middle of the 14th century coalesced to deliberate, first in the refectory, and then in the chapter house of the Abbey across the way. The specially summoned prelates, earls, and barons asserted, probably in Edward II's reign, a claim to remain in the parliament chamber with the king's council, thus making it a *magnum concilium*, and the parliament chamber was thus also known as *camera magni concilii*.

As soon as the various estates had agreed upon their answers they returned into the parliament chamber to report them, the Commons by the mouth of their Speaker, and the clergy by their prolocutor; and the business of the representatives was at an end. They might stay on to hear the result of their petitions, but did not do so in any numbers until their individual petitions had been converted into effective or common petitions and made the basis of legislation. In any case the council continued sitting in parliament to deal with parliamentary petitions long after all the other elements had gone home. Most of the petitions presented were, however, at once referred to the appropriate courts; and it was only with the residue, which on account of their special difficulty or the novelty of the remedy required could not be so referred, that the council dealt in parliament.

#### Formation of Two Houses

Parliament was thus in the 14th century a single chamber for its solemn business, and broke up into a variety of meetings for what might be called committee-business. The two "Houses," so familiar to-day, were formed not so much by the division of parliament as by the amalgamation of various "estates." The prelates, earls, and barons clung to, and gradually

swamped, the council, the lower clergy went off to convocation; and the knights of the shire and burgesses united to form the house of commons. In time the separate work of these two groups, lords and commons, grew more important than their joint work in common session.

More unfortunate from the point of view of understanding the origin and history of parliament has been the removal of the law courts from Westminster Hall to the Strand, and the consequent severance in the public mind of what was originally a single institution.

#### Change in Functions

The kernel of this change was the conversion of individual petitions, which are matters for judicial redress, into the common petition, which requires legislation and political action, and this development, which, more than anything else, created the house of commons, also determined the functions of parliament. Parliamentary petitions were more and more referred to the council and by the council to chancery, the star chamber, and others of its departments; and with the loss of this business parliaments grew more infrequent towards the close of the Middle Ages. Attendance was shirked both by lords and commons, and it was not until the growth of political intelligence followed on the Renaissance, localism expanded into nationalism, and the Tudors were compelled by their break with the Church to rely on parliament, that the ebbing tide of parliamentary activity was turned into its broader modern channels.

It was nursed by Henry VIII, grew fractious under Elizabeth, and rebelled against the Stuarts. That war against the Stuarts was the best testimony to the fostering care of the Tudors, for no parliament in the Middle Ages could ever have waged a war against the crown. But under Henry VIII a parliament, instead of being a matter of two or three weeks, sat for seven years, and during such periods acquired a solidarity, a self-knowledge, a tradition, a body of rules and customs, and a mastery of politics such as it had never possessed before. The Rolls of Parliament kept by the crown are superseded by the Journals kept by the Houses themselves; Henry VIII's habit of doing everything by parliament created the impression that nothing could be done without parliament; and it developed a will of its own,

denying the crown all sorts of control it had exerted before and eventually establishing its claim to be the superior power. The Revolution of 1688 asserted the responsibility of the executive to parliament, but not until 1832 was the responsibility of parliament to the people fully recognized, and that recognition led to the supremacy of the house of commons, which was established by the Parliament Act of 1911.

Parliament is now legally the sovereign body in the constitution, though politically it obeys the will of the constituencies, and is sometimes threatened with the unconstitutional alternative of "direct action." It makes and unmakes laws, retains or turns out ministries, and directly or indirectly controls the whole of British policy. Unlike most modern legislatures, and particularly that of the United States, it is bound by no written constitution and hampered by no "separation of powers."

#### Scope of Powers

It can alter the most fundamental law with the same expedition and machinery as it passes or repeals a tramway Act; and no fixed terms of office, either for legislature or executive, prohibit the solution of disputes between them by a dissolution of the legislature or an ejection of the executive. On the other hand the elasticity of the system subjects parliament to manipulation; it can be dissolved at a psychological moment, and can then prolong its own existence long after the popular mood has passed. The English parliament has been imitated in every quarter of the globe.

A. F. Pollard

*Bibliography.* Parliament: its History, Constitution, and Practice, Sir C. P. Ilbert, 1911; The Evolution of Parliament, A. F. Pollard, 1920; What Parliament Is and Does, Lord Hemingford, 1927.

**PARLIAMENTARY PROCEDURE.** The term "parliamentary procedure" in the British parliament is often restricted to the internal procedure which each house is free to regulate for itself; but it also covers properly the relations between the two houses and between them and the crown. It has developed over 600 years and is still constantly changing. It consists of a mass of time-honoured rules and conventions, supplemented by modern standing orders.

When a new parliament meets the commons are directed to elect a speaker, who is their impartial president and the guardian of procedure. He calls members

who wish to speak, puts the necessary questions, and announces the decisions of the house; but he takes no part in debates and has only a casting vote. He enforces the rules of order and has powers to select amendments and to accept or refuse the closure.

The government benches are on the speaker's right, those of the opposition on his left. All members are deemed equal in the house. They must address the chair and may not use "unparliamentary" language.

Every matter to be decided is put in the form of a question, capable of being voted upon, aye or no, and the decision of the majority is accepted as that of the house. The quorum is 40.

Standing orders provide the hours of sittings, but these hours may vary, either because the house has agreed to suspend these rules or because it is considering certain business which is specially exempted from the rules.

Questions to ministers occupy the first hour of every day (except Fridays) after prayers. The remaining time is divided between "notices of motions," or fresh propositions, and "orders of the day," which are items ordered by the house to be considered, including the stages of bills, financial business, and adjourned debates.

A bill may originate in either house and is given a formal first reading. Its principle is decided upon second reading and its details thrashed out during the committee and the consideration (or report) stages. After a final debate on third reading, the process is repeated in the other house. Failing agreement between the two houses, the bill is lost; but if agreement is reached, the bill receives the royal assent in the house of lords and becomes an Act of Parliament.

All taxing and spending proposals, being of special importance, require extra stages. Thus, the budget resolutions originate in committee of ways and means, the estimates for the fighting and civil services occupy about 26 "allotted days" in committee of supply, and projects for fresh spending start in other committees of the whole house. They must all be agreed to by the house itself and then incorporated in legislation, the finance bill, the appropriation bill, and other bills. Proposals for fresh spending can be initiated only by the crown, by means of the king's recommendation signified by a minister.



Much business is devolved upon standing committees of about 50 members which are microcosms of the house and which consider the committee stages of bills; and upon smaller select committees, e.g. the committee of privileges, the committee of selection, and the public accounts committee.

Procedure in the house of lords differs mainly in detail. The quorum is 3. The lord chancellor, who acts as speaker, has no powers of authority, but he is a member of the government and takes part in debate. No financial measure may originate in the lords. There are no committees of supply or ways and means, and no standing committees.

S. Gordon

*Bibliography.* Parliamentary Procedure, T. Erskine May, 14th ed., 1946; The House of Commons, R. Palgrave, 1878; Procedure of the House of Commons, J. Redlich, 3 vols., 1908; The Pageant of Parliament, 2 vols., 1921; Manual of Procedure in the Public Business of the House of Commons, 7th ed., 1942.

**Parliament, HOUSES OF.** Seat of the U.K. legislature at Westminster. The building in which the commons and the lords meet forms, together with Westminster Hall, a single pile. Erected in Yorkshire sandstone (which proved to weather badly in London's atmosphere) from Sir Charles Barry's designs to replace an edifice destroyed by fire in 1834, it was begun 1836 and completed 1857, although in use before that. In Late Gothic style, the present building covers 8 acres, and contains 11 courts, 100 staircases, and 1,100 apartments, principally the chambers of the house of commons and house of lords, those for use of the sovereign on ceremonial occasions, the royal court, and royal gallery. Westminster Hall, part of the ancient palace, escaped the fire of 1834, and forms a vestibule to the houses of parliament.

Other features include the clock tower (containing Big Ben, *q.v.*) at the N. end, 318 ft. high; the central tower, 300 ft.; and Victoria Tower, 340 ft. While parliament is sitting a Union flag flies from Victoria Tower by day, a light is shown in the clock tower by night. The imposing river front, with its terrace facing the Thames, is 940 ft. long, and adorned with statues of English monarchs. Twelve times the houses of parliament were hit by bombs during the Second Great War, the commons chamber being destroyed on May 10, 1941 (it was rebuilt 1946-50). Frescoes painted

for the halls and galleries include Maclise's huge Death of Nelson and Meeting of Wellington and Blucher; Copley's Death of Chatham; Cope's series depicting events of the Stuart period; another series by various artists depicting the Tudor period; and a series relating to the building of Britain by Glyn Philpot, Charles

Sims, A. K. Lawrence, Sir W. Rothenstein, and others. See Commons, House of; Lords, House of; Westminster Hall.

**Parliament Acts.** Statutes limiting the power of the house of lords. The first was enacted Aug. 18, 1911. A controversy had arisen between lords and commons as a result of the rejection by the lords of the budget of 1909. After two general elections in 1910, a Parliament bill was passed by the commons, and by the lords after an announcement by H. H. Asquith, the prime minister, that the king would, if necessary, use his prerogative to create enough new peers to secure its passage.

The Act limited the power of the lords to delay a money bill to one month, and provided that if any other bill were passed by the commons in three successive sessions it would become law at the end of that time even if not passed by the lords. But two years had to elapse between its second reading in the commons on its first introduction and its final acceptance by that house. A further act, passed by the commons in three successive sessions 1947-49, reduced this to two successive sessions and a period of one year.

The Act of 1911 had referred in its preamble to the necessity for reforming the house of lords, and various proposals for reform were put forward, notably by a committee under Lord Bryce in 1917-18. In 1947-48 an inter-party conference was held to consider reform, but this broke down in May, 1948, following impossibility of agreement on the length of the suspensory period. See Lords, House of.

**Parliamentary Agent.** Person, usually a solicitor by profession, and acquainted with the details



Parliament Square, Westminster. View from the W. side looking towards the Houses of Parliament. The statue on the left is that of Lord Palmerston. See page 6349

of parliamentary procedure, employed to assist the promoters of private bills by canvassing members of parliament, securing information, and facilitating the drafting and passing of bills.

**Parliamentary Train.** Type of railway service formerly operated in the U.K. When the first railways were granted concessions to build their tracks, they were obliged by an act of 1844 to reserve a proportion of accommodation on the trains for 3rd-class passengers at the rate of 1d. a mile. The companies met this obligation by running a number of trains of this kind every day. Parliamentary trains were generally slow and uncomfortable, and were gradually withdrawn as higher fares were allowed, and 3rd-class accommodation was provided on ordinary trains. The last ran in 1912.

**Parliament Hill and Fields.** London open space. Situated near the Hampstead border of St. Pancras, the hill is 319 ft. in height, and has a chain of ponds, over one of which the roadway is carried by a viaduct. Since 1889 the hill and fields, covering 265 acres, have formed an integral part of Hampstead Heath, being acquired for the public at a cost of £301,000.

The name Parliament Hill is supposed to connect the spot with an ancient folk-moot, or with the planting of cannon here by the Parliamentary forces for the defence of London during the Civil War. Its alternative name of Traitors' Hill is associated with the legend that here the confederates of Guy Fawkes assembled to witness the blowing up of the houses of parliament. The tumulus popularly known as Boadicea's Tomb was explored in 1894, when it yielded the rival theories that

it was an ancient burial mound of the early bronze period, or that it was originally raised as a Roman boundary mark.

**Parliament Square.** Square and open space in the city of Westminster. Facing New Palace Yard, it is overlooked by Westminster Abbey, the houses of parliament, and Middlesex Guildhall. Until the early 19th cent. the site was covered by narrow streets and mean houses; when the houses of parliament were completed, the present lawns were laid. In the square are statues of the prime ministers Canning, Peel, Palmerston, Derby, and Beaconsfield, and of President Lincoln. The roads bounding the square form a traffic "roundabout." Parliament Street leads out on the N. side. The square was laid out afresh during 1950-51, leaving a larger central lawn than before, with improved gardens. See illus. opposite.

**Parma.** Province of Italy, in Emilia-Romagna, bounded N. by Cremona, S. by Massa e Carrara, Spezia, and Genoa, E. by Reggio, W. by Piacenza. Mountainous in the S., it slopes in a N.E. direction from the Ligurian Apennines to the Po, which forms its N. boundary. The Parma and Taro, tributaries of the Po, are the chief rivers watering the province. Cereals, wine, olive oil, cheese, fruit are produced. Cattle rearing and silk manufacture are important industries. There are many mineral springs, e.g. at Salsomaggiore. The capital is Parma (v.i.). Area, 1,258 sq. m. Pop. (1951) 385,277.

**Parma.** City of Italy, capital of the prov. of Parma. It stands on both banks of the river Parma. 75 m. by rly. S.E. of Milan. An ancient and handsome city, surrounded in part by ramparts, its streets are straight and wide, while

the old Aemilian Way traverses the city from E. to W. Its Lombard-Romanesque cathedral, built about 1059-1106, with later additions, has a lofty campanile and an octagonal dome, containing a fresco of the Assumption, one of Correggio's greatest works. The Romanesque baptistery, with a Gothic upper storey, 1196-1302, built of marble, is one of the finest in Italy.

There are about 60 other churches, some of which were damaged by bombing during the Second Great War. The most notable, which received only superficial damage, are three Renaissance churches. Our Lady, 1521-39, S. John the Evangelist, 1510-1614, with frescoes in the dome by Correggio, and the Annunciation, 1566-1632. The ducal palace, or Palazzo della Pilotta, had art galleries with paintings by Correggio and other masters, a library containing over 300,000 volumes and 4,500 MSS.; and a museum of antiquities: but was extensively damaged during the Second Great War. The university dates from 1482. The convent of San Paolo contains the celebrated Putti of Correggio. The chief industries of the city are connected with printing, silk, cereals, dairy produce, wine, and cattle.

Probably of Etruscan origin, Parma was colonised by Rome, 183 B.C., and the Roman bridge over the Parma is still extant. Its bishopric is first mentioned A.D. 378. In 1346 Parma was sold by the Correggio family to that of Visconti, and was associated under the Sforzas with the duchy of Milan until 1511. On June 29, 1734, the Austrians were defeated here by the French and Sardinians. Pop. (1951) 123,095.

During the Second Great War Parma was lightly damaged except near the rly. station. The city was captured from the Germans by the 5th Army on April 25, 1945, with no opposition worthy of mention being encountered.

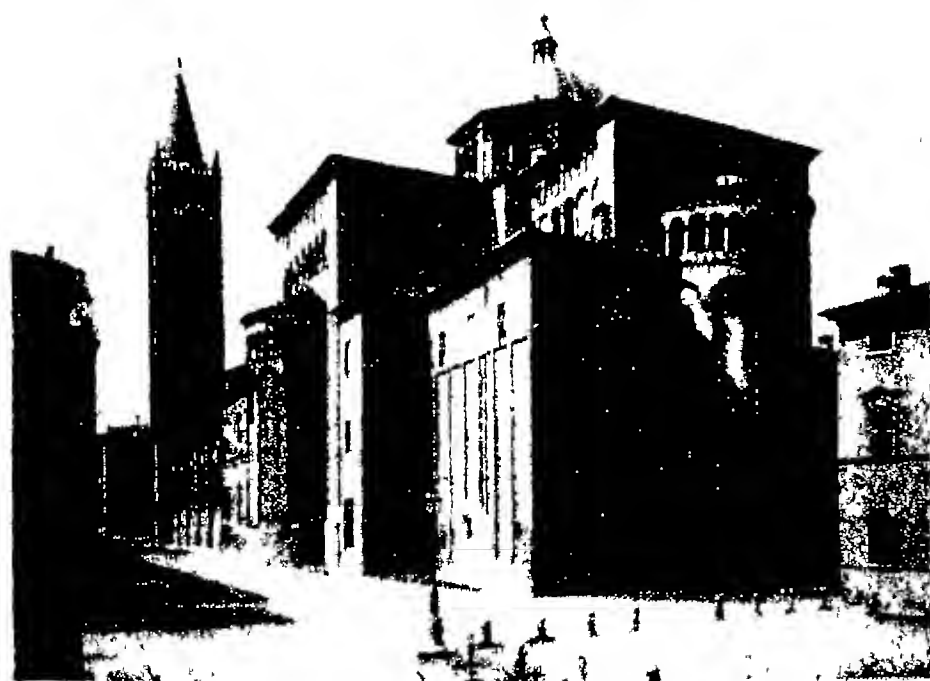
**Parma, DUCHY OF.** Former independent state of Italy. Adherent to the Guelph faction during the Middle Ages, the city and its territories passed through many hands before they

were absorbed in the papal possessions in 1512. In 1541 Pope Paul III made his son, Pier Luigi Farnese, duke of Parma and Piacenza, and his descendants held the title until 1731, when, with the death of Antonio, 8th and last Farnese duke, the duchy became an apanage of the Spanish crown. It was transferred to Austria in 1734, but reverted to Spain in 1748. In 1796 the French Revolutionary armies occupied it for six years, when Napoleon included it in the kingdom of Etruria, 1802.

The congress of Vienna, 1815, welded Parma, Piacenza, and Guastalla into a grand duchy of Parma, in which Napoleon's widow, Marie Louise, was given a life interest. On her death, 1847, this duchy passed to Charles Louis, son of the last Spanish duke. Charles Louis, a mere tool of Austria and governed by Tom Ward, the English stable-lad whom he had made prime minister, fled at the revolution of 1848, and the following year abdicated in favour of his son, Charles III, who was assassinated in 1853. He was succeeded by his son Robert, who was deposed in 1860, when the grand duchy became part of the kingdom of Italy. See Farnese; Italy.

**Parma, ALESSANDRO FARNESE, 3RD DUKE OF (1545-92).** Italian soldier and statesman. Born in Rome, Aug. 27, 1545, Alessandro was the son of Ottavio Farnese (1520-86) and Margaret, natural daughter of the emperor Charles V, and spent his early years at Brussels and Madrid. Under Don John of Austria he showed conspicuous courage at Lepanto, 1571, and was dispatched to aid his struggle to maintain Spanish supremacy in the Netherlands, 1577. He succeeded Don John as governor-general in 1578, and by astute diplomacy and skilful generalship succeeded in recovering the Walloon dependencies, his chief exploit being the 14 months' siege of Antwerp, 1584-5. He succeeded in saving Paris from capture by Henry IV, 1590, and Rouen from the Huguenots, 1591, but died at Arras on Dec. 3, 1592. See Farnese.

**Parmenides** (c. 540-460 B.C.). Greek philosopher. A native of Elea, he was the chief representative of the Eleatic school of philosophy, founded by Xenophanes. Whereas Heraclitus had taught that everything was in a state of flux or movement, and that permanence was an illusion of the senses, Parmenides taught the opposite doctrine. All movement



Parma, Italy. Cathedral and 13th century campanile, from the south-east



and change, he said, were illusions, and all things have existed, and will exist, the same for ever.

**Parmenio** (d. 330 B.C.). Macedonian soldier. He was second in command to Alexander the Great on his Persian campaigns, leading the left wing in the three battles of the Granicus, Issus, and Gaugamela. Becoming involved in a plot organized by his son against Alexander, he was put to death.

**Parmesan Cheese.** Product of two districts of Italy, Parma and Emilia. Very hard, it is used, grated, for cookery. It is made from heated cow's milk, into which rennet is dropped in bags and then removed. The curd is broken up, heated again, pressed between boards, and left in a mould for two or three years. The crust is then nearly black, the cheese very pale, and full of tiny holes.

**Parmigiano** OR PARMIGIANINO. Names by which the Italian painter Girolamo Francesco Maria Mazzola, born Jan. 11, 1504, at Parma, is usually called, from his birthplace. The son and nephew of painters, he was chiefly self-taught, but his early work was influenced by Correggio, and his later by Raphael. His chief paintings include frescoes at Parma and in Rome, and a famous altarpiece at Bologna. Parmigiano was one of the first Italians to practise etching, for which he made drawings. He died at Casal Maggiore, Aug. 24, 1540. *Consult* Drawings of Parmigianino, A. E. Popham, 1953.

**Parmoor,** CHARLES ALFRED CRIPPS, 1ST BARON (1852-1941). British politician. Born Oct. 3,



1st Baron Parmoor,  
British lawyer  
Russell

1852, he was educated at Winchester and New College, Oxford, where he took four firsts. He was called to the bar in 1877, took silk in 1890, and became attorney-general to the prince of Wales in 1895, being reappointed in 1901 and 1912. He was Unionist M.P. from 1895 to 1914, with intervals, for various divisions, then becoming a baron. An authority on ecclesiastical law, he was chancellor and vicar-general of York, 1900, and vicar-general of Canterbury, 1902-24. During the First Great War he championed the conscientious objectors, and later became an enthusiastic supporter of the League of Nations. Embracing the cause of Labour, he was lord president of

the council in Ramsay MacDonald's 1924 cabinet, holding the same office from 1929 to 1931, when he resigned on the formation of the National government. In 1939 he finally broke with the Labour party. He was made a privy councillor in 1914. His *Principles of the Law of Compensation*, 1881, is a standard work. He also published *A Retrospect*, 1936. He died June 30, 1941. His second son was Sir Stafford Cripps (*q.v.*).

**Parnahyba** OR PARNAÍBA. Town and river of Brazil. The town, in the state of Piauí, stands on the river, 11 m. from its mouth. An important river port, it exports cattle, hides, tobacco, cotton, etc. Pop. (1950) 30,900.

The river rises in the Serra das Mangabeiras, and flows N.N.E., forming the boundary of the states of Piauí and Maranhão. After a course of about 800 m., 400 m. of which are navigable by small steamers, it discharges into the Atlantic by a delta.

**Parnassiens.** Group of French poets of the later 19th century. The name is derived from *Le Parnasse Contemporain*, a collection of poems by many authors published in 1866. Among the contributors were the older poets Leconte de Lisle, Théophile Gautier, Théodore de Banville, and Charles Baudelaire. Other collections under the same title appeared in 1869 and 1876. An offshoot of Romanticism, the school, which was mainly lyrical, eschewed all appeals but the aesthetic. Falling into preciosity and artificiality, they were succeeded by the Symbolists (*q.v.*).

**Parnassus.** Mountain of Greece. It is the highest peak, 8,069 ft. alt., of a range in Phocis, ancient Greece, lying N. of Delphi. Parnassus was sacred to Apollo and the Muses, and also to Dionysus. Immediately above Delphi is the celebrated Castalian spring.

**Parnell,** CHARLES STEWART (1846-91). Irish nationalist. He was born at Avondale, co. Wicklow, June 27, 1846, of an English family long settled as landowners in Ireland, and was educated at Magdalene College, Cambridge. In 1875 he entered parliament as a Home Ruler.

Though a landlord, a Protestant, and a man reserved and aloof in manner, he exercised a commanding influence which transformed his party, small as it was, into an instrument which came near to paralysing the house of commons; a disciplined body which devoted itself to such an organized obstruction of public

business as hitherto had never been known in England.

Parnell's aim was explicitly the establishment of an independent parliament in Dublin. For the agrarian question, the grievance consciously felt by the Irish peasant, he avowedly cared little, but he saw in it the means of combining the great majority of the Irish



Charles S. Parnell,  
Irish Nationalist

people into one compact force. To that end in 1878 he organized the Land League, poured vitriolic scorn on every English attempt to provide remedial agrarian legislation, and urged the Irish peasantry to adopt every conceivable method short of positive crime to render the law nugatory. The Phoenix Park murders in 1882 forced him to an open denunciation of such crimes, and a contemptuous repudiation of charges that he had condoned them.

Popular opinion still held Parnell guilty, morally at least, of Irish crimes and outrages, until a special judicial commission, 1888-89, was appointed to investigate the whole question of "Parnellism and crime." The sensational event of this inquiry was the demonstration that an alleged letter of Parnell's, utterly damning if genuine, was a forgery by Richard Pigott, which *The Times* newspaper had accepted with reckless credulity. Liberals and Irish Home Rulers were drawing into a close alliance, when Parnell was disastrously implicated in a divorce scandal. His intimate and trusted agent, Captain O'Shea, cited him as co-respondent in an action for divorce which he instituted against his wife, and, the action being undefended, secured a decree in Nov., 1890.

Parnell's retirement from the leadership was demanded by Gladstone; the Irish party was divided, the great majority insisting upon Parnell's withdrawal. Parnell fought fiercely for his position, repudiating the Liberal alliance. But before it could be said that the fight was decided, he died suddenly on Oct. 6, 1891, within four months of his marriage to Mrs. O'Shea. Had he lived, his help would probably have enabled Gladstone to carry the Home Rule proposal in 1892. He was at once a driving and a restraining force, and without him Irish nationalism

was tactically leaderless. See Home Rule; Ireland.

**Bibliography.** Lives. R. B. O'Brien, 1898; Mrs. C. S. Parnell, 1914; St. J. Ervine, 1925; The Parnellite Movement, T. P. O'Connor, 1889; P., The Last Five Years, A. F. Robbins; P. Vindicated, H. Harrison, 1931; Parnell and His Party, 1888-90, C. C. O'Brien, 1957.

**Parnell, THOMAS (1679-1718).** British poet. Of English descent, he was born in Dublin and edu-



Thomas Parnell,  
English poet

cated at Trinity College. Made a minor canon of S. Patrick's cathedral, 1704, he was archdeacon of Clogher, 1706-16, and then became vicar of Finglas. Visiting England in 1706, he was on terms of friendship with Harley, Swift, and Pope. He contributed to The Spectator and The Guardian; was one of the Scriblerus Club; and aided Pope in his translation of the Iliad, for which he wrote the introductory essay on Homer. On the death of his wife (Anne Minchin) in 1711, Parnell gave way to intemperance, and, dying at Chester, was buried in Trinity church there, Oct. 24, 1718. Praised by Goldsmith, who wrote his Life, and by Campbell, his work is marked by love of the classics, humorous fancy, grace, good taste, and moral feeling, and serves as a link between that of Pope and Goldsmith. Especially notable are his Hymn to Contentment, A Night-piece on Death, Epistle to Pope, A Fairy Tale, and The Hermit. Pope edited Parnell's Poems, 1721, and G. A. Aitken his Collected Works, 1894.

**Parody.** Imitation, mainly as manifested in literature, of the general style or spirit of a writer or of the form of a specific piece of work, with intent to make fun. It differs from burlesque, which is a laughable perversion of a serious theme, in that it is a mocking of the manner rather than the matter. In Sir Owen Seaman's words, "At its lowest a mere verbal echo, at its highest it becomes a department of criticism."

Though the art is an old one, exemplified first in The Battle of the Frogs and Mice, and merging in the hands of Aristophanes through burlesque into pure comedy, modern parody may be said to begin with The Pipe of

Tobacco of Isaac Hawkins Browne, 1736, little known now except by students. Popular parody started in England with The Anti-Jacobin of Canning and Frere, 1797, and The Rejected Addresses by James and Horace Smith, 1812. Some of the chief British parodists are Thackeray, Sir Theodore Martin, W. E. Aytoun, C. S. Calverley, Quiller-Couch, Seaman, Sir John Squire, and Sir Max Beerbohm.

**Parole.** In international law, the pledge of honour of a prisoner of war to observe conditions imposed by his captor, if allowed his liberty. Under The Hague convention the government of a country cannot compel one of its subjects to break such parole, though if the government disapproves of the conditions of parole it is the duty of the combatant concerned to surrender again to the enemy. In a military sense, a parole is a watchword given by the commander of an army or garrison for officers to use. In penal law, it is a pledge of good conduct given by a person convicted of crime as a condition of his or her release from prison. The parole system in penology is steadily on the increase in many countries, notably the U.S.A.

**Paros.** Island in the Aegean Sea, belonging to Greece. One of the Cyclades group, it is 5 m. W. of Naxos, and has a length of 13 m. and a breadth of 10 m. Pyramidal in shape, it rises in Hagios Elias, the ancient Marpessa, to about 2,500 ft. Near the chief town, Parikia, are the quarries of Parian marble, wrought from ancient times. Paros was colonised by Ionian Greeks who afterwards founded Parium and Thasos. It was captured by the Persians in 490 B.C. and later became merged in the Athenian confederacy. The Arundel marbles were brought to England from Paros in 1667. Its area is 96 sq. m.

**Parotid Gland.** One of the salivary glands situated just in front of the ear, its duct running on the inner aspect of the cheek to empty itself along the upper jaw. It is generally the first gland to become enlarged in mumps.

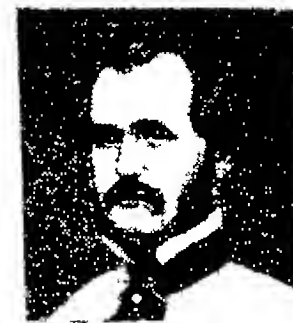
**Parousia.** Greek term for coming, appearance, or revelation. It is used in the Greek version of the N.T. for the Second Advent or Second Coming of Christ (2 Thess. 2). See Messianic Hope.

**Parquet (Fr.).** Name given to an inlaid or mosaic wooden flooring. Small blocks of wood are arranged in a geometric pattern. Oak is the wood most generally

used, other woods of various colours being added for the more elaborate forms of parquetry.

**Parr, CATHERINE (1512-48).** Queen of Henry VIII, entered in this work as Catherine Parr.

**Parr, GEORGE (1826-91).** English cricketer. Born at Radcliffe-on-Trent, near Nottingham, he was the son of a small landowner and farmer. In 1840 he joined the All England team led by Clarke, which he himself captained, 1857-1870. Playing for Notts, he was regarded as the finest batsman of his day. He died June 23, 1891.



George Parr,  
English cricketer

**Parr, THOMAS (c. 1483-1635).** English centenarian, known as Old Parr. He is supposed to have lived in ten reigns, from that of Edward IV to that of Charles I. Tradition said that he was born at Winnington, Salop, and he lived there mostly. In 1635 the earl of Arundel took him to London that he might be shown at court as a marvel, but in London he died on Nov. 15, at the alleged age of 152, being buried in Westminster Abbey. Taylor, the water poet, wrote a pamphlet, The Olde, Olde, Very Olde Man, 1635. The cottage in which Parr lived between Shrewsbury and Welshpool was sold to a namesake in 1917.

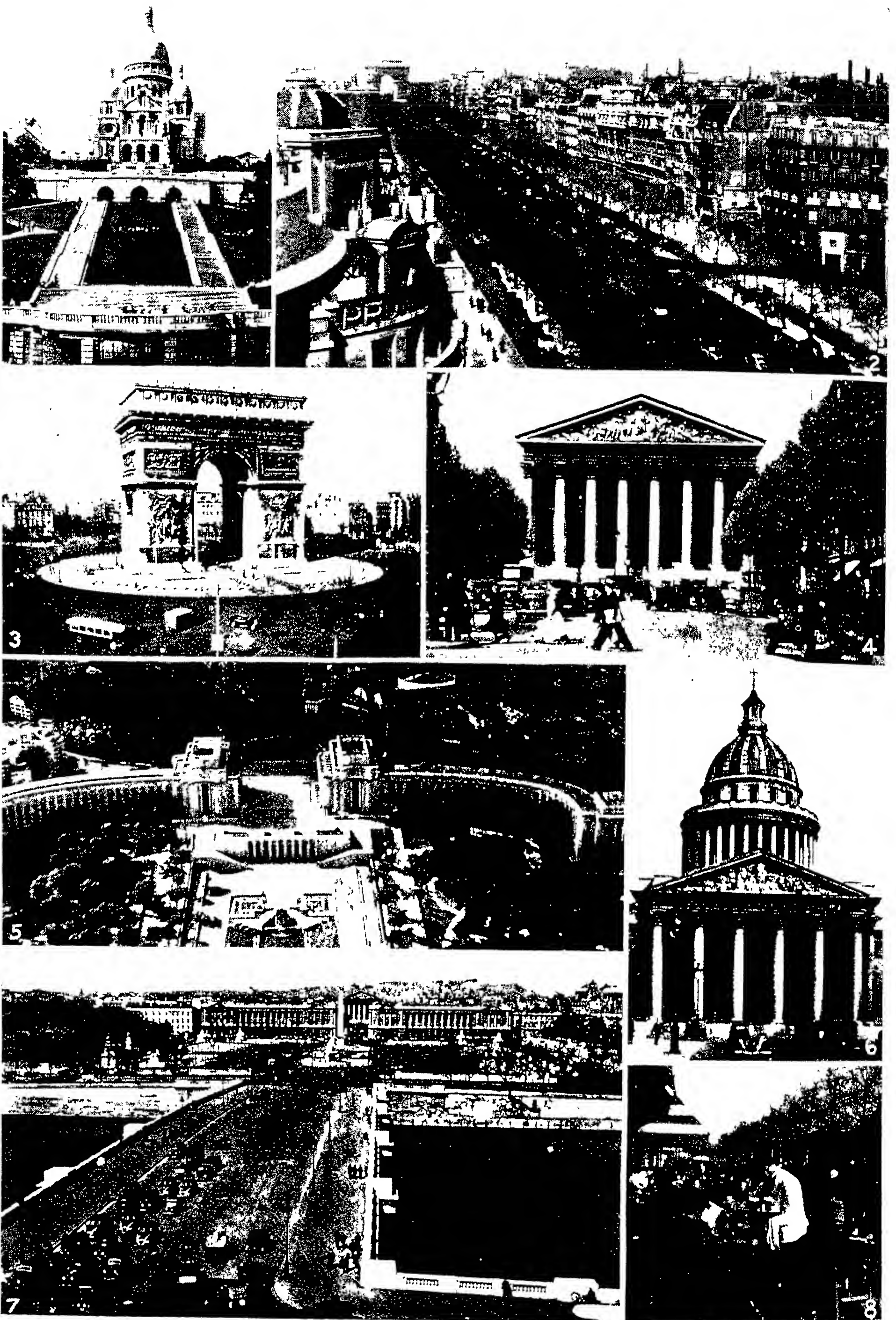


Thomas Parr,  
English centenarian

**Parrakeet.** Name popularly given to many small long-tailed parrots. The ring-necked parrakeet, well known in aviaries, has green plumage with a red collar. It is about 16 ins. long, and is found in India and Cochin China. Flying in flocks and feeding upon fruit and grain, it is a serious pest to gardeners and agriculturists. The grass parrakeets of Australia have beautiful plumage of green and blue, and are popular pets. They spend most of their time on the ground, as do also the swamp parakeet and the ground parrakeet, while both have barred tail feathers. See Parrot, colour plate.

**Parral** OR HIDALGO DEL PARRAL. City of Mexico, in the state of Chihuahua. An important mining centre and rly. junction, it stands on the river Parral, 120 m. S. of





1. Church of Le Sacré Coeur, Montmartre. 2. Avenue des Champs Elysées, looking towards the Arc de Triomphe de l'Étoile (3). 4. Church of La Madeleine. 5. The Palais de Chaillot, now occupying the site of

the former Trocadéro. 6. The Panthéon, built on the site of the tomb of the patron saint of Paris, S. Geneviève. 7. Place de la Concorde, and the Concorde bridge. 8. A familiar boulevard café scene

**PARIS: FAMOUS BUILDINGS AND SCENES IN THE FRENCH CAPITAL. See text pp. 6337-41**

**Parry Sound.** Town of Ontario, Canada. On Georgian Bay, at the mouth of the Seguin, it is 150 m. N. of Toronto, on the C.P.R. and C.N.R. Chief industries are planing mills, and making spools and buttons. The surrounding district is noted for pines, hemlock, and hardwoods, and deposits of copper and feldspar. Pop. 5,765.

**Parsec.** Unit used in astronomy for measuring stellar distances. It is the distance at which the parallax (*q.v.*) of a star would be one second of arc. No known star is as close as this, so all stellar distances are represented in parsecs by numbers greater than 1. The nearest, Alpha Centauri, is at a distance of 1.3 parsecs. One parsec equals 3.26 light years or 19.2 million million miles.

**Parsees** OR **PARSIS** (inhabitants of Pars, or Persia). Religious community of India and parts of Persia. In India, where they form a leading section of the native trading classes, they number rather more than 100,000, mostly in Bombay and other places on the W. coast. Their religion, known as Parseeism, is the modern form of Zoroastrianism. On the Arab conquest of Persia, in 651, the inhabitants were forcibly converted to Mahomedanism, with the exception of those who fled the country, and a few others whose descendants, numbering about 9,000, maintain their religion in Persia to the present day. Parsees, known from their regard for fire as an emblem of purity, as fire-worshippers, are also sometimes called Ghebers or Guebers, an Arabic term for unbelievers.

The Parsees of India are the most enterprising and educated native community, and many have devoted their wealth and ability to philanthropic and public ends. Olive-complexioned and black-eyed, they are notable for integrity, benevolence, business acumen, loyalty, and clean living. They expose their dead on iron gratings in towers of silence, where the bones, denuded of flesh by vultures, drop into a pit, and are afterwards removed to a resting-place underground. See India: Zend-Avesta: Zoroastrianism.

**Parsifal.** Opera by Wagner. Produced at Baireuth in 1882, it is based on Wolfram von Eschenbach's Parzival, a version of the legend of Sir Perceval, in which the story of the Grail is combined with that of the simple, ignorant hero, who attains wisdom through charity and purity of heart. The

opera created a storm of controversy, principally on account of the supposed resemblance of the argument to the life of Christ. It is now accepted as musically one of the greatest operas. See Grail, The Holy; Opera: Perceval.

**Parsimony** (Lat. *parsimonia*, sparingness). In metaphysics, the law of parsimony deprecates the unnecessary assumption of the existence of anything in order to explain what is admitted to be fact, when such explanation is equally possible without such assumption. In physical and general science the same law asserts that the number of causative factors adduced in the explanation of a phenomenon shall be the smallest possible. This is the doctrine of Ockham (*q.v.*), known as Ockham's razor, that entities should not be multiplied unnecessarily.

**Parsing.** Exercise in grammar. A group of words, preferably a complete sentence, is taken, and each word is examined as to the part of speech to which it belongs and the relationship it bears to other words in the group. Description should be detailed, *e.g.* a noun is common, proper, or abstract; a verb transitive or intransitive, finite or infinite; an adverb one of time, place, or manner, etc. See Parts of Speech.

**Parsley** (*Carum petroselinum*). Biennial herb of the family Umbelliferae. It was introduced into Great Britain from Sardinia in 1548, and is used as a seasoning and flavouring in various forms. It succeeds best in a light loam, generally failing to withstand the winter in a heavy or clayey soil. To ensure a succession of crops three sowings of seeds should be made—one in March, another in June, and the third in Aug. in rows



Parsley. Plant of Dwarf Perfection parsley  
By courtesy of Sutton & Sons

12 ins. apart. When the young plants are 2 ins. in height they may be separated to a distance of about 6 ins. every way, and left until the leaves are ready to cut.

At the end of the second year the crop will be coarse. The old plants should then be eradicated, and a fresh sowing made in a different situation.

**Parsley Fern** (*Cryptogramma crispa*). Fern of the family Polypodiaceae. Native of Europe, Asia, and Alaska, it forms tufts among the stones in mountainous districts, the fronds springing from a scaly rootstock. The fronds are rather thin in texture, oval-wedge-shaped, bluish green, and much divided like a parsley leaf.

**Parsnip** (*Pastinaca sativa*). Native British biennial plant of the family Umbelliferae. In its wild state it has no nutritive value, but under cultivation it has developed into a popular edible root vegetable.

able, attaining often a length of 2-3 ft. Parsnips flourish in deep, rich loam which has not been freshly manured; the presence of raw stimulant tends to deform and split the roots. The seed should be sown in the open ground in March, in rows a foot apart and an inch deep. The young plants should be thinned to 9 ins. apart every way, and left until Sept. or Oct. The roots are ready to pull when the foliage dies down, but may be left until touched by early frost.



Parsnip. Edible roots of the vegetable  
By courtesy of Sutton & Sons

**Parson** (Med. Lat. *persona*, a representative). Legal title of one who holds a parochial cure of souls. Holy orders, presentation, institution, and induction are necessary to make a man a parson, and as such the owner of the parsonage house, glebe, tithes, and other dues. The term parson properly belongs only to a rector. A vicar had the same parochial responsibility, but did not hold the church property, being merely the deputy of an absent rector. The term is used in a



Chihuahua. Silver is extensively worked in the neighbourhood, and wine making is an industry. Parral has some splendid ancient churches. Pop. 26,000. Parral is also the name of a small town and dist. in the Linares prov. of Chile.

**Parramatta.** Suburb of Sydney and river of New South Wales, Australia, in Cumberland co. The suburb is a major manufacturing centre and stands on the river to the W.N.W. of Sydney, with which it is connected by road, electric rly., and river steamer. The river is in reality an extension of Port Jackson, 10 m. in length.

**Parratt, Sir Walter** (1841–1924). British organist. Born at Huddersfield, Feb. 10, 1841, he



Sir Walter Parratt,  
British organist  
Elliott & Fry

was educated privately, and became organist at St. Paul's church there, 1854–61. He succeeded Stainer at Magdalen College, Oxford, in 1872, and ten years later was appointed organist to St. George's Chapel, Windsor, a post he held until his death on March 27, 1924. Professor at the R.C.M. from 1883, he conducted the choral class. He was knighted in 1892, and appointed master of the queen's musick. During 1908–18 he was professor of music at Oxford. Parratt, who helped to establish Reger's reputation as a composer in England, revolutionised organ playing. A devotee of Bach, he was regarded as a purist but a splendid performer. *Consult* Life, D. F. Tovey and G. Parratt, 1942.

**Parret.** River of England. It rises in Dorset, near Cheddington, and flows N.W. through Somerset, past Langport and Bridgwater, to the Bristol Channel, which it enters by an estuary. Near Langport, to which it is navigable, it receives the Yeo and the Isle, and lower down the Tone joins it. Its length is 35 m.

**Parricide.** Murderer of a father. The term is not recognized in English law, no distinction being made between the killing of a father and any other form of murder. In Roman law the term included the murder of other near relatives, e.g. a grandfather, brother, etc., and was punishable by drowning in a sack. *See* Murder.

**Parrot.** Name applied in a broad sense to all birds of the order Psittaci, of which there are about 500 species known, from the

warmer regions of both Old and New Worlds. They are distinguished structurally by the form of the bill. Both mandibles are hooked, the lower biting within the larger, strongly curved upper one, which is hinged to the skull. The feet are of the scansorial type, two of the toes being turned backwards.

Parrots have brightly, often gaudily coloured plumage, are monogamous, mostly sociable, and nest in tree holes. They are mainly fruit-eaters, though the kea has in recent years developed a carnivorous propensity. The order includes the cockatoos (Ptyctolophidae), macaws (Conuridae), parrakeets (Platyceceidae), lorries (Trichoglossidae), the true parrots (Psittacidae), and others. In general the name parrot is restricted to the family Psittacidae, mainly African; familiar in the U.K. is the grey parrot (*Psittacus erythacus*). Importation into the U.K. of parrots (and similar birds) was prohibited 1930–51, and from Feb., 1953.

The food should be mainly seeds, such as maize, hemp, canary seed, with nuts of all kinds except monkey-nuts; apple, pear, plum, banana; raw carrot, dry biscuit, and a stick of soft wood to cut to pieces. There should always be a good supply of coarse, gritty sand; and two or three times a day the bird should be allowed a drink of water, but a constant supply will be abused. Animal food, even a bone, should never be given. *See* Bird, colour plate; Kaka; Kea; Lory; Macaw; Parrakeet; Parrot, colour plate.

**Parrot Fish** (*Scarus*). Name applied to fish of the family Scaridae, closely allied to the wrasse family, found in tropic seas, one species occurring in the Mediterranean. The teeth are modified to form sharp biting beaks; and this, together with brilliant colouring, has given rise to the popular name. These fish feed upon corals, molluscs, and seaweeds, which they chew in a curious fashion, giving rise to the ancient notion that they were ruminating animals. The Mediterranean species was greatly esteemed for the table by the Greeks and Romans.

**Parry.** General name of a group of islands in the Arctic Ocean. They are situated N. of Lancaster Sound, Melville Sound, and Barrow Strait, and W. of Baffin Bay. They include Devon, Cornwallis, Bathurst, Melville, and Prince Patrick islands. Named after Sir W. E. Parry, who visited them in his 1819 expedition, they were further explored by the expeditions in search of Sir John Franklin.

**Parry, Sir (Charles) Hubert** (Hastings) (1848–1918). British composer. Born at Bournemouth.



Sir Hubert Parry,  
British composer

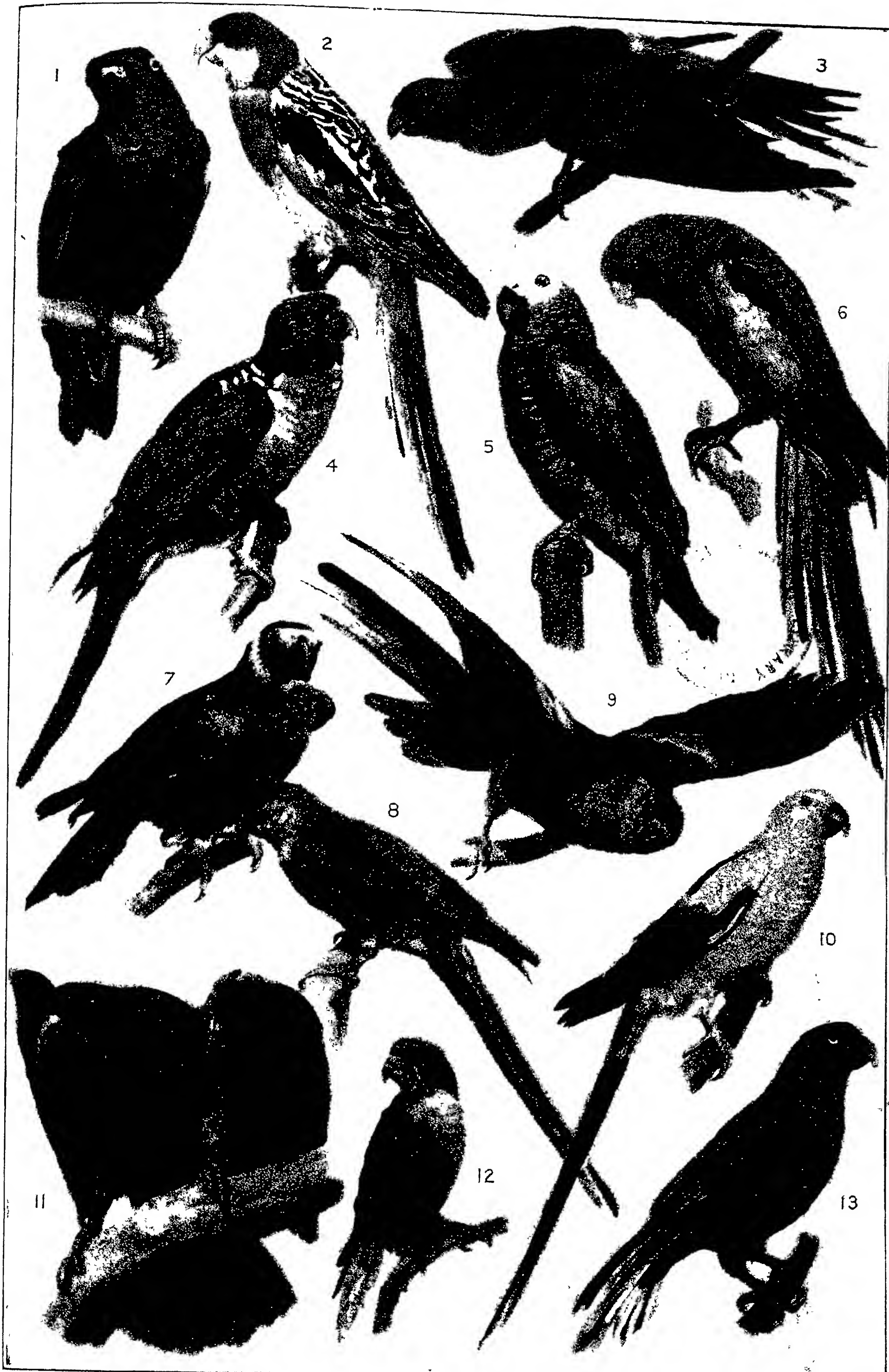
Feb. 27, 1848, he was educated at Eton and Exeter College, Oxford, and studied music at Stuttgart and in London. In 1883 he was appointed professor of composition and of musical history at the Royal College of Music, and he became its director in 1895. From 1899 to 1908 he was professor of music at Oxford. He was knighted in 1898 and made a baronet in 1902. He died Oct. 7, 1918. Parry's compositions include symphonies, overtures, and chamber music; several fine oratorios, of which *Judith* and *Job* are best known; and beautiful settings of Milton's *Blest Pair of Sirens*, and Blake's *Jerusalem*. He wrote the *Art of Music*, 1893; *Music of the 17th Century*, 1902; and *J. S. Bach*, 1910. *A Life*, by C. L. Graves, appeared in 1926.

**Parry, Sir William Edward** (1790–1855). British explorer. Born at Bath, Dec. 19, 1790, he entered the navy in 1806, was employed in protecting whalers in Spitsbergen, 1811–13, and five years later accompanied Ross's Arctic expedition. In 1819 he was



Sir W. E. Parry,  
British explorer

given command of the *Hecla*, and set sail to find the North-West Passage. Passing through Baffin Bay he made 114 W. During 1821–25 Parry made two other Arctic voyages of discovery, and in 1827 he sailed to Spitsbergen, and there made an attempt to reach the N. Pole by boat and sledge. Surmounting great difficulties, and hampered by the southward drift of the ice, Parry reached 82° 45' N., a record which was unsurpassed for nearly fifty years. Returning in 1829, he was knighted, and later became deputy governor of Greenwich Hospital. He died at Ems, July 8, 1855. His best known works are *Voyages to the North-West Passage*, 1821; *Narrative of an Attempt to Reach the N. Pole in Boats*, 1828. His *Memoirs* were ed. E. Parry, 1857.



1. Blue-headed parrot, *Pionus menstruus*, Brazil. 2. Rosella parakeet or parroquet, *Platyercus eximius*, S.E. Australia. 3. Red-shouldered parakeet, *Aprosmictus erythropterus*, Australia. 4. Swainson's lorikeet, *Trichoglossus haematod.* E. Australia. 5. African grey parrot, *Psittacus erithacus*, W. Africa. 6. Pennant's parakeet, *Platyercus elegans*, S. Australia. 7. Vulturine parrot, *Gypopsitta vulturina*, Brazil.

8. Beautiful parakeet, *Psephotus pulcherrimus*, Australia. 9. Many-coloured parakeet, *Psephotus varius*, S. Australia. 10. Black-tailed parakeet, *Polytelus anthoepus*, S. Australia. 11. Red-sided lorikeet, *Lorius loratus*, British New Guinea. 12. Beautiful lorikeet, *Charmosyna placensis*, New Guinea. 13. Black-capped lory, *Domicella garrula*, N.W. New Guinea.

#### PARROT: MULTI-COLOURED REPRESENTATIVES FROM THREE CONTINENTS

To face page 6352.



popular sense of any minister of religion. See Clergy; Induction.

**Parsons, Sir Charles Algernon** (1854-1931). British inventor and engineer. Sixth and youngest son of the 3rd earl of Rosse, a distinguished astronomer, he was born in London June 13, 1854, and was educated at Trinity College, Dublin, and St. John's, Cambridge. After serving an



Sir Charles Parsons,  
British inventor and  
engineer

engineering apprenticeship with Armstrong, he acquired in 1884 a partnership in the Newcastle firm of Clarke, Chapman and Co., and built his first turbo-generator. In 1889 he founded at Heaton his own works for making turbines and electrical equipment. Besides revolutionising the application of mechanical power, he designed a mercury pump for mass production of incandescent electric lamps.

In 1893, when most engineers dismissed the possibility of mechanical flight, Parsons built a steam-driven helicopter that lifted itself several yards into the air. Two years later he constructed a model monoplane which on its first test rose 20 ft. and flew 80 yds. His auxelophone, for amplifying musical and vocal sounds without the distortion inseparable from reproduction by a mechanical diaphragm, was adopted by Henry Wood and used at Queen's Hall in 1896. Other experiments resulted in diamonds being made by the crystallisation of carbon, and a non-skid device for motor tires.

Parsons was elected F.R.S. in 1898, and in 1902 received the society's Rumford medal. He was president of the Institute of Marine Engineers 1905-06, and of the British Association 1919-20. Created K.C.B. in 1911, he was the first engineer to be awarded the O.M., in 1927. He died on board ship, Feb. 11, 1931. See Turbine. Consult Life, R. Appleyard, 1933: The Steam Turbine, R. H. Parsons, 1946.

**Parsons or Persons, Robert** (1546-1610). English Jesuit. Born at Nether Stowey, Somerset, June 24, 1546, and educated at Oxford, he resigned his fellowship of Balliol in 1574 to escape expulsion, on account of his tendencies to Roman Catholicism. He went to Rome and became a member of the Society of Jesus, July 4, 1575. Henceforth all his energies were

bent on overthrowing the reformed Church in England, which he secretly visited in 1580. In 1587 he was made rector of the English College at Rome, and in 1591 wrote his *Responsio ad Elizabethae edictum*. He died April 18, 1610.

**Parsonstown.** This name of a town in Offaly, Irish Republic, has been superseded by Birr (*q.v.*).

**Part.** In music, that portion of a concerted composition which is allotted to any component voice or instrument. Thus there are four parts in the ordinary hymn-tune: for soprano, alto, tenor, and bass. By analogy, contrapuntal music, such as fugues, etc., which are derived from vocal forms, is also said to be in parts, even though it is performed upon a single instrument, as the pianoforte. A part song is an unaccompanied song harmonised in three or more parts.

In medieval times composers of vocal music did not write their work in score (*q.v.*) but in separate "part books," usually one for each part. Alternatively, the separate parts were displayed side by side on the double page of a book, so that singers of the different parts could use the same book, and sometimes so that singers of different parts could read the music from opposite sides of a table.

**Partabgarh.** Town of Rajasthan, India. It lies 120 m. N.W. of Indore and is noted for its enamelled work. Pop. (est.) 15,000.

It was the capital of the former princely state of Partabgarh, which had an area of 873 sq. m., and was one of those states which in 1948 united to form Rajasthan. The hills to the N.W. of this area are peopled chiefly by Bhils; elsewhere it is open country.

**Partabgarh.** Dist. of Uttar Union, India, in Faizabad division. It lies N. of Allahabad dist., with the Ganges in the S.W. Annual rainfall is 38 ins. The chief crops are rice, wheat, barley, and millet. The capital is Bela. Area 1,457 sq. m. Pop. (1951) 1,110,734.

**Partenkirchen.** Bavarian winter resort, described under Garmisch-Partenkirchen.

**Parthenogenesis** (Gr. *parthenos*, virgin; *genesis*, generation). Biological term expressing the development of an organism from an egg cell which has not been fertilised. Some animal species, *e.g.* many gall flies and saw flies, consist of females only; in others males appear infrequently. Among aphids (plant lice) parthenogenesis

is common and, often accompanied by vivipary, leads to rapid multiplication of females during spring and summer. Males are usually produced later on to fertilise the last eggs of the season, which pass the winter as such and develop into viviparous parthenogenetic females the following spring. Other instances are known among rotifers and crustaceans and among plants.

Reduced or haploid parthenogenesis occurs when development is from an unfertilised egg the nucleus of which contains the gametic number of chromosomes. In bees and some other insects such eggs produce males. The occasional appearance of haploid plants of a kind normally diploid suggests that they have arisen from haploid egg cells. Unreduced or diploid parthenogenesis is more common in plants; it takes place when as a result of aberrations in sporocyte divisions an egg cell is formed with the sporophytic number of chromosomes.

**Parthenon, THE** (Gr., virgin's chamber). Temple of Athena, on the Acropolis, Athens. It was built between 447 and 438 B.C., and was opened on the occasion of the Panathenaic festival in the latter year; the cult of Athena having been previously practised in an older temple on the Acropolis, near the site of the Parthenon itself. The architects were Ictinus and Callicrates, and the structure, which is of the Doric order, consisted entirely of Pentelic marble. The Parthenon measures 220 ft. by 77 ft., and the cella, or nave, 194 ft. long, is divided into two parts, the main chamber to the east, where Pheidias's gold and ivory statue of Athena was placed, and a smaller chamber to the west. There were eight outside columns at each end, and 17 on each side. The portico at either end was double, *i.e.* there was an inner line of six columns behind the outer line of eight. Strictly speaking, the Opisthodomos, where the virgin priestess received the offerings, was the Parthenon proper.

Architecturally the Parthenon is the crowning instance of the subtlety involved in the apparent simplicity of Greek construction. Penrose discovered that the horizontal lines are imperceptibly curved, and that the perpendicular lines incline very slightly towards the centre of the temple. The apparently flat floor is slightly higher towards the centre than at the



Parthenon, Athens. Ruins of the ancient temple of Athena, from the north-west

edges; the columns not only taper towards the summit, but are of greater girth at the centre than they are at the base. Little variations of height and thickness occur in the corner columns, according to the intensity of the light that fell upon them, and the fluting is studied with an eye to its relationship with the light.

The chief glory of the Parthenon was the decorative sculpture by Pheidias (*q.v.*) and his school. Of the metopes (*q.v.*) attributed to them, there were originally 92, 41 of which remain in their place, the bulk of the remainder being in the British Museum. The subjects, including combats between Centaurs and Lapithae, and Greeks and Amazons, are treated in high relief. The group of statuary on the eastern pediment represents the birth of Athena; that on the western, the contest between Athena and Poseidon for the possession of Attica. Finally, the continuous frieze round the cella, representing the Panathenaic festival, ranks as the most wonderful pictorial representation in low relief in the world, as regards both scale and treatment. In contrast to the gleaming white marble columns and roof of the Parthenon, the sculptures and mouldings were enriched with colour. With the exception of the inside sculptures, the Parthenon remained nearly intact till 1687, when the explosion by a Venetian bomb of a powder magazine stored here by the Turks dislodged much of its splendid masonry. See Acropolis, also col. plate; Art; Athens; Centaur; Elgin Marbles.

*Bibliography.* The Antiquities of Athens, J. Stuart and N. Revett,

1762-1816: The Sculpture of the Parthenon, A. S. Murray, 1903; Athens and its Monuments, C. H. Wheeler, 1913; Cambridge Ancient History, vol. 5, 1927; Views of Attica, R. Warner, 1950.

**Parthenopaeian Republic.** Republican state formed at Naples, 1799-1800. The name is taken from Parthenopē, the old name of Naples. Established under French auspices, Jan. 23, 1799, after the flight of Ferdinand IV the republic was in the hands of patriotic and cultured men who endeavoured to establish a model state run on elevated but quite impracticable lines. Championnet, the French general, did little to help.

When Cardinal Ruffo, commissioned by Ferdinand to re-establish the Bourbon rule, marched up through Calabria with his army of brigands and liberated convicts, the French withdrew, and after a desperate but hopeless encounter, the republicans were defeated at Ponte della Maddalena, Ruffo and his cut-throats entering and sacking Naples, June 13, 1800. An armistice was signed between Ruffo and the republican authorities, which Nelson ignored on his arrival. He arrested and hanged Caracciolo (*q.v.*), and other leaders of the republic, which thus ended in treachery and bloodshed. See Naples.

**Parthia.** Country of ancient Asia. It lay S.E. of the Caspian Sea, and adjoined Media on the W. and N.W. As Parthava, it was a satrapy of the old Persian or Achaemenid empire, and when that empire was overthrown by Alexander the Great, and split up among his successors, was included in the dominion of the Seleucid kings of Syria. About 250 B.C. it

became an independent kingdom under Arsaces I, founder of the Arsacid dynasty. During the succeeding centuries it increased enormously in size and importance, and under Mithradates I (170-138 B.C.) became the Parthian empire, stretching at its greatest extent from the Euphrates to beyond the Indus. Even the all-conquering Romans could make no real headway against this great Eastern power.

Of nomadic Scythian origin, though gradually absorbed by the Persians, the Parthians relied on their formidable mounted bowmen. They promoted Greek civilization, and made Ctēsiphon their capital. They overthrew Crassus (*q.v.*) at Carrhae (Haran) in 53 B.C., conquered Syria, 40-38, and were again intermittently at war with Rome with varying success from A.D. 115 to 218. In 226 Parthia was conquered by the Sassanid Ardāshir I. and absorbed in the rehabilitated Persian empire.

**Parthian Shot.** Decisive remark by a person supposed to be defeated in an argument. The term originated in a military tactic frequently practised by the Parthians. When the tide of battle appeared to go against them, they would pretend to retreat by galloping away from the enemy; then turning in their saddles, they would discharge their arrows against their pursuers, so throwing them into confusion.

**Partick.** Dist. of Glasgow, Scotland, formerly a separate burgh. It is situated where the Clyde is joined by its tributary, the Kelvin, which separates it from Glasgow proper. It is in the main an industrial area, with engineering works, shipbuilding yards, etc. In 1912 it was absorbed into Glasgow. Before the industrial developments of the 19th century, Partick was a village at which the bishop of Glasgow had a palace.

**Partinico.** Town of Sicily, in the prov. of Palermo. It stands on the coastal rly., about midway between Castellamare and Palermo, 15 m. direct W.S.W. of the latter city. It manufactures silken and woollen goods, and trades in wine and oil. Pop. 23,900.

**Partisan.** Adherent of a party or cause who follows his leader with unflinching devotion. The term is also applied to guerrilla troops who harry an enemy army in occupation of their country. In the Second Great War partisans operated in most German- and Italian-occupied territories and



compelled the enemy to maintain there large numbers of troops urgently required on the military fronts. A partisan was also the name of a long-handled weapon resembling a halberd, used in the 14th and 15th cents. See Guerrilla Warfare.

**Partition.** In law, the actual division, by metes and bounds, of real property which belongs to co-owners. After the Partition Acts of 1868 and 1876 the court could instead order the land to be sold and the proceeds divided. Since the Law of Property Act, 1925, land belonging to co-owners has been held on trust for sale. Partition can take place by the trustees with consent of the co-owners or by order of the court.

**Partnership.** Defined by the Partnership Act, 1890, as "the relation which subsists between two or more persons carrying on a business in common with a view to profit." Thus there are excluded mere joint ownership of property and the mere association of persons with a common object but not with a view to profit, e.g. a social club, or a philanthropic society. The great characteristic of partnership is that every partner is agent for the firm as a whole.

The law of Scotland differs from the law of England. In Scotland a firm is a separate legal person, just as a limited liability company or corporation is. In England "there is no such thing, in law, as a firm." A partnership firm is merely a convenient way of describing the individuals who compose the firm; and the rights of a creditor are against these individuals, so that he can sue them individually and issue execution against their private estate. In England also all partnership debts are joint. In Scotland partnership debts are joint and several.

As between partners the rights and duties and powers are governed by *articles* of partnership; but these may be varied from time to time by practice, or verbally. A partnership comes to an end by effluxion of time, agreement to dissolve, decree of dissolution, or death of a partner. See Business Names.

**Partridge.** A game bird of which two species occur in Great Britain. The common or grey partridge (*Perdix perdix*) is found throughout Great Britain and Europe, but the French or red-legged species (*Alectoris rufa*) is a native of S. Europe, and was introduced into Great Britain about the close of the 18th century.



Partridge. Common British hen partridge, with a brood of chicks

The French bird is distinguished by its more handsome plumage and bright red legs and beak, and has now become common in England, preferring sandy soil and uncultivated land, as distinct from the grey partridge, which thrives best on rich soil and amid cultivated fields. The French bird is more fleet of foot and difficult to approach than the grey partridge.

Partridges are found in coveys of from five to twenty birds, except in the nesting season, feeding upon insects, leaves, grain and other seeds early in the morning and in the afternoon. During the heat of the day they bask in the sun and take frequent dust baths. At night the covey roosts in a circle in the middle of an open field, each bird facing outwards as a precaution against enemies. The nest is made of grass and leaves placed in a hollow in the earth under a hedge or among the standing corn, and may contain up to 20 eggs.

In Great Britain the partridge shooting season as fixed by the Game Act is from Sept. 1 to Feb. 1 inclusive. The birds are either driven towards the guns or shot over dogs. In large open fields the former is the more usual plan, beaters raising the birds and then driving them towards the guns arranged in line in the form of an arc of a circle. In small fields and broken country walking up the birds over dogs is the better plan, pointers and retrievers being the best dogs. See Eggs col. plate; Game; Game Laws; Shooting.

**Partridge,** SIR BERNARD (1861-1945). British cartoonist.



Sir Bernard Partridge

Born in London, Oct. 11, 1861, he was educated at Stonyhurst, and became a stained glass designer and decorative painter. He became a contributor to *Punch* in 1891, was junior cartoonist under Sam-  
bourne.

and eventually (1910) chief cartoonist, making over 2,400 black-and-white drawings. He excelled in the heroic, monumental style and his drawings were unrivalled for facial expression; and his sense of the occasion made his cartoons world-famous, especially during the First Great War, e.g. Unconquerable, depicting the German Kaiser and Albert of the Belgians. Another well-known cartoon showed S. George defending Malta against the dragon in the Second Great War. Knighted 1925, Partridge died Aug. 9, 1945.

### Partridge

**Berry.** Popular name for *Mitchella repens*, a small trailing evergreen herb belonging to the family Rubiaceae. It has simple leaves, pairs of fragrant white flowers, and red berries. N. America is its home.

The name is also given to a shrub, *Gaultheria procumbens*, of the family Ericaceae.

**Partridge Wood** (*Andira inermis*) OR CABBAGE TREE. Evergreen tree of the family Leguminosae. It is a native of Jamaica. The alternate leaves are broken into about a dozen oval-lance-shaped leaflets in two rows. It has clustered purple flowers and roundish fleshy pods. The name is also applied to the wood of *Heisteria coccinea*, a W. Indian tree of the family Olacaceae.

**Parts of Speech.** In grammar, the name given to the different classes of words, the members of which play a special and well-defined part in the sentence. They are generally reckoned as eight in number: adjective, adverb, conjunction, interjection, noun, preposition, pronoun, verb. See Grammar; Parsing; Noun, etc.

**Part-song.** This style of composition is mentioned under Part.

**Party.** In politics, a body of persons holding the same political opinions and usually opposed by one or more parties holding other opinions. Government by party is the normal condition of things in all countries where popular representation is established. In a different sense the phrase applies where there is only one official party. The word is also used for those who hold similar views on religious or



Partridge Berry. Leaves and flowers with trailing roots

other matters, *e.g.* a party in the Church of England, and in a more general sense for a body of persons banded together in some common purpose, as a pleasure party. In law, party is a synonym for a litigant, or a person entering into an agreement. See Conservative; Democrat; Labour; Left; Liberal; Republican, etc.

**Party-Wall.** Wall separating one house from another. The term is, however, often applied to a wall or fence separating the land of one owner from that of another. Before the Law of Property Act, 1925, party-walls usually belonged to both owners as tenants in common; now the wall is usually regarded as divided vertically into two, each owner having half.

**Pas** (Fr., step). Word adopted in English for certain dances particularised by other French words indicating the number of performers engaged. Thus a *pas seul* is an exhibition of the art of dancing given by a single virtuoso; a *pas de deux*, *de trois*, or *de quatre*, a similar spectacular display by two, three, or four dancers.

Precedence is another sense in which there is good authority for the use of the word *pas* in English, to have the *pas* of anyone signifying the right of going before him on ceremonial occasions. *Faux pas*, a false step or trip, is an accepted term for a social solecism. See Ballet; Dancing; Russian Ballet.

**Pasadena.** City of California, U.S.A., in Los Angeles co. It is 9 m. N.E. of Los Angeles in the foothills of the Sierra Madre, at the head of San Gabriel Valley, in a fruit farming area. In the suburb of San Marino is the Henry E. Huntington library containing a fine collection of manuscripts and rare books; also the Huntington art gallery. The Rose Bowl, a sports stadium in a dry cañon, seats 86,000. Mount Wilson Observatory lies 5 m. N.E. Settled by the Spanish in 1771, Pasadena was a centre of sheep ranches until 1873; it was incorporated in 1886. Pop. (1950) 104,577.

**Pasargadae.** City of ancient Persia. Situated in the plain now called Murghab, and established as the capital of Persia by Cyrus the Great, it remained the capital until it gave place to Persepolis. Of the great city and its palaces and parks, little remains except a few sculptures, and the ruined but impressively simple tomb of Cyrus.

**Pascal,** BLAISE (1623-62). French philosopher, theologian, and mathematician. Member of an aristocratic Auvergnat family,

he was born at Clermont-Ferrand, June 19, 1623, and educated by his father. As a boy he revealed a



Blaise Pascal,  
French philosopher

precocious genius for mathematics; he wrote on sound at 12, invented a calculating machine, and, before the family moved to Rouen in 1641, had completed a work on conic sections which laid the foundations of modern methods. At Rouen he met Corneille and Descartes and—which proved of more significance—a number of Jansenists. His sister Jacqueline was attracted to the convent at Port Royal and wished to enter it. Blaise, who often visited the place with her, encouraged her in this course. To prevent such a happening, their father sent them both to Paris in 1650, but on his death in 1651, Jacqueline at once entered Port Royal. Blaise remained in Paris until 1654, and it is impossible to discover accurately what influences persuaded him that year to embrace a monastic life.

His life at Port Royal was uneventful; he continued his work on mathematics and science. An attack being made by the Jesuits on Antoine Arnauld, the leading teacher there, Pascal was entrusted with the task of answering it. To this fact we owe the *Lettres Provinciales*, 18 letters published anonymously in 1656. Ironie masterpieces, they established Pascal's reputation as one of the greatest stylists in French literature. He was the first to state clearly the nature of the conflict between reason and religion. He divested of pedantry the problems of metaphysics. His affection for the theory of probabilities doubtless underlay his challenge: "Either God exists or He does not; if He does, and you deny Him, you are lost. If He does not, and you affirm Him, no matter." Deeper was his vision of man as a monster linked with two immensities—the wretchedness of despair, and the certainty of a brighter destiny.

At Port Royal he worked at his *Pensées*, a projected apologia of Christianity, but disease made rapid progress, and, being moved to the Paris house of Mme. Périer, his eldest sister, he died there, Aug. 19, 1662. The *Pensées sur la Religion et sur Quelques Autres Sujets* were unfinished, and

not until 1844 was a reliable edition compiled by A. P. Faugère. Pascal's influence on mathematics and science has been profound particularly his study of barometric pressure. Work on the cycloid, in which he solved problems that had baffled Galileo, Descartes, and Fermat, entitles him to a high place among those who evolved the differential calculus. He can claim to have founded the science of hydrodynamics and, with Fermat, the theory of probability.

**Bibliography.** Works, A. P. Faugère, 8 vols., 1886-95; L. Brunschwig, 14 vols., 1904-14; Lives (in French), V. Cousin, 5th ed. 1857; J. Bertrand, 1891; E. Boutroux, 1900; V. Giraud 1905; J. Chevalier, 1930; (in English) Viscount St. Cyres, 1909; H. R. Jordan, 1909; M. Duclaux, 1927; R. Soltan, 1928; M. Bishop, 1937; J. Mesnard, 1952. The Secret of Pascal, H. F. Stewart, 1941

**Paschal.** Name of two popes and one anti-pope. Paschal I was pope from 817-24. Paschal II, a Benedictine monk, reigned from 1099 to 1118. Overpowered and imprisoned by the emperor Henry V, he yielded the right of investiture, which his predecessors had refused to allow. He died Jan. 21, 1118. Paschal III was anti-pope in the reign of Alexander III, during 1164-68.

**Pasco** OR CERRO DE PASCO. Mountain group of Peru, in the dept. of Junin. The mountain systems of Peru form a knot in the neighbourhood of the town of Cerro de Pasco (*q.v.*). See Andes.

**Pasco.** Dept. of Peru of which the full name is Cerro de Pasco. It is about 14,000 ft. above sea level, and is connected with Oroya by the Central rly. Good roads run to Lima, Cuzco, and Huanuco. Here are some of the greatest copper and silver mines in S. America. The capital is Cerro de Pasco. Area 11,655 sq. m. Pop. (1956 est.) 154,800.

**Pas-de-Calais.** Department of France, area 2,606 sq. m. It takes its name from Pas de Calais, Fr. name for the Strait of Dover, on which it is situated. Bounded landward by Nord and Somme depts., it is mainly a fertile plain with some low ranges of hills. The chief rivers are the Lys and the Scarpe. Wheat, oats, potatoes, and other crops are grown; horses, cattle, and poultry are reared. Coal is mined, and there is a considerable fishing industry. For conveying the coal the dept. has a complete network of canals. Arras is the capital, and in the department are Calais,



Boulogne, Lens, St. Omer, Wimer-eux, and Agincourt. A region of drained fenland called the Wattergands is famous for its market gardens. Pop. (1954) 1,276,833.

Containing Arras, Loos, and Béthune, this dept. saw some of the most stubborn fighting in the First Great War. Here, too, in the part of France nearest the British Isles, the Germans erected launching sites for their flying bombs in 1944, so that the dept. came in for heavy Allied bombing. Even after the invasion of Normandy the German high command thought that a second, probably larger, landing would be made in Pas-de-Calais, and held reserves there. British and Canadian forces cleared Pas-de-Calais Sept. 1 and 2, 1944, except for Calais, where the German garrison held out until midnight, Sept. 30–Oct. 1.

**Pasha.** Turkish title given to governors of provinces, high military and naval officers, and others. The rank of pashas was formerly indicated by horse tails carried as standards, three denoting the highest grade, two the middle, and one the lowest. Bashaw is an early English form of the word.

**Pasque Flower** (*Anemonē pulsatilla*). Perennial herb of the family Ranunculaceae. A native of Europe and N. Asia, it has a woody rootstock, and leaves very much divided into narrow segments. The dull purple, silky, solitary flowers are supported on stout erect stalks. The seeds have feathery tails 1½ in. long. The folk-name, from Lat. *Pascha*, Easter, is due to the fact that Easter eggs were often stained by rubbing them with the flowers.

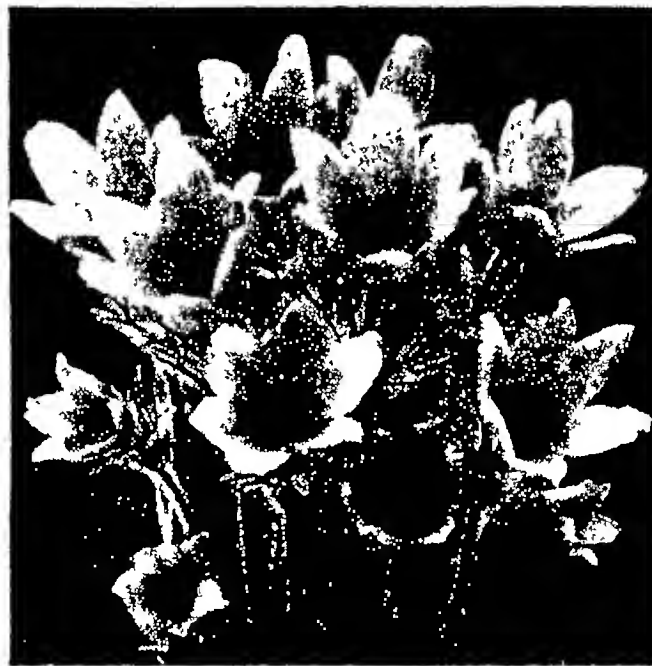
**Pasquinade.** Abusive personal lampoon, or satire. The name is derived from a 15th century cobbler of Rome, Pasquino, famous for his sarcasms. After his death a statue found near his stall was given the name of Pasquino, and to it wits secretly affixed their lampoons on public persons. Thus the lampoons themselves came to be termed pasquinades.

**Pass.** Low part of a water-parting or divide. Passes generally owe their origin to denudation produced by two streams, which rise close together but on opposite sides of the divide. Sometimes they occur where a river has breached a mountain range. They are of great economic value, since routes connecting the opposite sides of the divide will cross them, or rlys. will tunnel below them, as in the examples of the St. Gotthard Pass

in the Alps, and Uspallata or Cumbre Pass in the S. Andes. See Carso.

**Passacaglia.** Old stately dance, probably of Spanish origin (*pasar*, to walk; *calle*, a street). The dances were one or two in number. The music was constructed over a ground bass in triple time, a feature which led composers to adopt it as a medium for displaying their fertility in devising variations. It was thus very much like the chaconne (*q.v.*), though in the passacaglia the theme might appear in any part. A celebrated example is Bach's passacaglia in C minor for the organ.

**Passaglia, CARLO** (1812–87). Italian theologian. He was born at Lucca, May 2, 1812, joined the Jesuits at fifteen, became in 1844 a professor at the Collegio Romano, and was in favour with Pope Pius IX. His championship of Italian unity and opposition to the temporal power of the pope led to his expulsion from the Jesuit Society, and he settled at Turin, where the king made him professor of moral philosophy. In 1861 he became a



Pasque Flower. Blooms of the species of anemone, formerly used for colouring Easter eggs

member of the Italian parliament, and editor of *Il Mediatore*. Excommunicated in 1862, he died March 12, 1887.

**Passaic.** River of New Jersey, U.S.A. It winds first in a N.E. direction, and at Paterson turns S. to enter Newark Bay between Jersey City and Newark. At Paterson it makes a sheer descent of 50 ft. It is 98 m. long and navigable for about 10 m. to Passaic city.

**Passaic.** City of New Jersey, U.S.A., in Passaic co. It stands on the Passaic R., at the head of navigation, 9 m. above Newark and 4 m. below Paterson, and 10 m. N.W. of New York. The state's leading textile manufacturing and processing centre, it produces woollens and worsteds, cotton and linen

goods. Other industrial products include chemicals, dyes, mill machinery, boxes, and biscuits. Settled about 1676 by the Dutch, Passaic was incorporated in 1869 and became a city in 1873. Washington crossed the Passaic here in the retreat of 1776. Pop. 61,394.

**Passamaquoddy Bay.** Inlet on the E. coast of N. America. An arm of the Bay of Fundy, between the state of Maine, U.S.A., and the province of New Brunswick, Canada, it is 12 m. long and 6 m. wide, and forms a fine harbour, protected by a group of islands. Among the rivers flowing to the bay is the St. Croix. The bay is named from an Algonquin tribe.

**Passant.** In heraldry, an animal walking past in profile, with its dexter paw elevated. If its head faces the spectator it is passant guardant, and if looking back over its shoulder passant regardant. See Guardant; Regardant.

**Passaro.** Cape of Sicily. It forms the S.E. corner of the island and is a low, rocky projection on the E. side of the small bay of Porto Palo. Here Admiral Byng gained a naval victory over the Spanish fleet on Aug. 31, 1718. Near here Canadian troops landed July 10, 1943, the day the Allies invaded Sicily during the Second Great War.

**Passarowitz.** German and historic name of Pozarevac, a town of Yugoslavia. It lies near the Morava river, 37 m. E.S.E. of Belgrade, and has considerable agricultural trade, being a centre of a rich stock raising and grain growing country. The treaty of Passarowitz, signed on July 21, 1718, by Austria, Venice, and Turkey, with England and the Netherlands as mediators, assigned Morea to the Turks, but gave Austria the Temesvar, Wallachia as far as the Aluta, Belgrade, and other parts of Serbia.

**Passau.** Town of Bavaria, Germany. It lies on the Danube, here joined by the Inn and Ilz, 92 m. E.N.E. of Munich. It has been called one of the most beautiful towns in Germany, built on the slopes of a hill 1,000 ft. high. The cathedral of S. Stephen dates in part from the 6th or 7th century, and other old buildings include the Gothic hospital church (1345), the Baroque S. Paul's (1618), and the town hall (14th century). Originally a Celtic settlement (Bojodrum), it was later renamed Batava, and was the site of a 1st-century Roman fortress. The scene of a bishopric from 739, it was a clerical principality from the

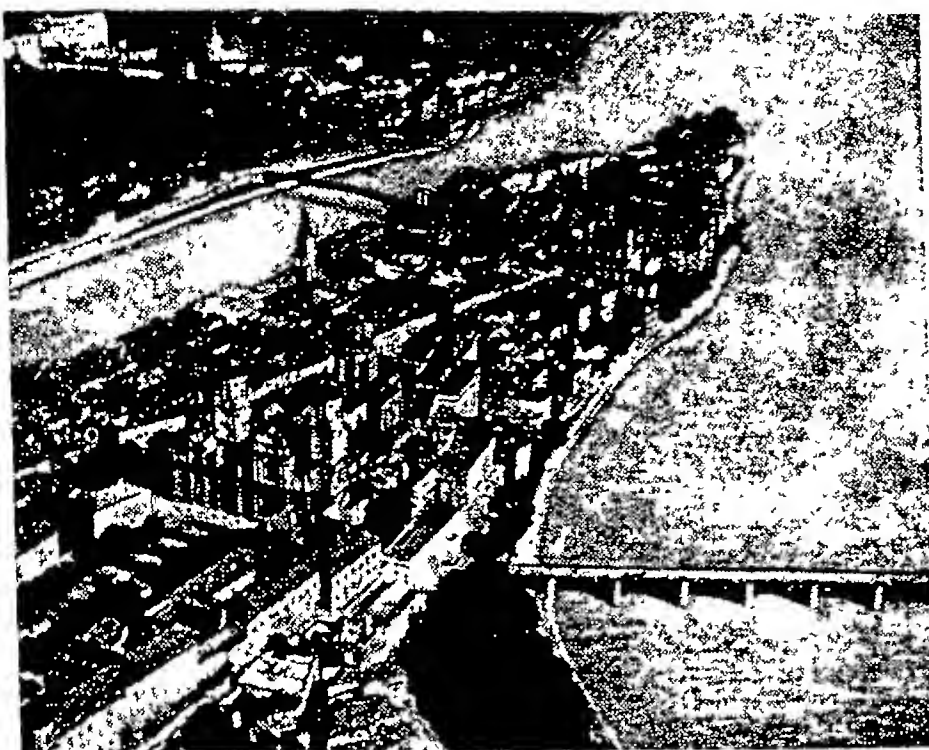
end of the 12th to the beginning of the 19th century. Partly in the possession of the Grand Duke of Toscana from 1803 to 1805, it became Bavarian in the latter year. Industries in the 20th century have included the manufacture of porcelain and pottery, brewing, and some linen-weaving. It was captured by armour of the U.S. 3rd

army, May 3, 1945, and at the end of the war came within the American zone of occupation. Pop. (1950) 35,000.

**Passau, TREATY OF.** Agreement to conclude hostilities between Roman Catholics and Lutherans, 1552. Signed by Maurice, elector of Saxony, the Lutheran champion, and Ferdinand, king of the Romans, on behalf of the emperor Charles V, its principal clauses provided for holding a diet to consider how best to prevent future religious warfare. It decreed that if the conference should prove abortive, peace should be continued; and gave free exercise of religion to both Protestants and Roman Catholics. See Augsburg, Peace of.

**Passchendaele.** Village and ridge of Belgium in the prov. of W. Flanders. The former is 7½ m. N.E. of Ypres. The ridge, 200 ft. in alt., extends from Gheluvelt on the S. to the forest of Houthulst in the N., about 18 m., and is the last elevation before the Flanders plain is reached. From the village, on the ridge, Bruges and Ostend can be seen in clear weather.

Passchendaele became notorious in the First Great War as giving its name in common parlance to a prolonged and terrible battle between British and Germans officially known as the 3rd battle of Ypres. It was a British offensive battle, lasting from July 31 to the end of Nov., 1917. The offensive had been prepared by Haig for almost a year beforehand, and was agreed to, with some misgivings, by the British war cabinet in June, 1917. Its declared minimum object was the clearing of the Flanders coast and the German submarine bases, but the British H.Q. staff were optimistic enough to believe that it might lead to a complete breakthrough, with the employment of "masses"



Passau. The beautiful Bavarian town at the confluence of the river Inn, left, and the Danube

of cavalry in clearing the German forces out of Belgium.

The first objective was the capture of the entire length of Passchendaele Ridge as a jumping-off place. The first attack was delivered by the 5th army (Gough) with the 2nd army (Plumer) on the right and the 1st French army on the left. The British 4th army (Rawlinson) was moved to the coast ready for an advance on that quarter.

The battlefield selected was a reclaimed swamp. Tanks were to be used in force, in spite of protests from the Tank Corps that the terrain was entirely unsuitable. The evidence of weather reports for the district over 80 years also showed that the offensive was badly timed, but the risk was taken. The generals in command expressed serious misgivings about the success of the venture, but did their best to carry out their orders. Foch and Pétain were also opposed to the offensive, their preference being for a period of limited Allied offensives pending the arrival of the promised U.S. armies in 1918.

The attack was preceded by 24 days of violent bombardment which shattered the drainage system of the swampy region. On the opening day of the attack there was a heavy storm. Gough's infantry began the advance at 3.50 a.m., but most of the tanks were soon ditched. German defences were captured on the left, but on the right there were heavy casualties and little progress was made in the bad weather. Gough foresaw the danger of forming a salient within the range of German artillery on hills to his right, and asked for help from the 2nd army in clearing those hills; but the help was not sent for several weeks. Meanwhile the farther the 5th

army advanced on the right the heavier were the casualties.

After a week of steady rain which reduced the battlefield to an appalling condition, a further British attack was made on Aug. 16, E. and N.E. of Ypres, with limited success. The rainfall proved to be far above the average for the time of year, but even had it been below average, the destruction of the drainage system would have made the ground a quagmire. Hundreds of unwounded men and thousands of wounded lost their lives by drowning in the yellow slime of shell craters. Duckboard walks and other tracks were under constant fire. The Germans used mustard-gas shells on a heavy scale, and employed machine-gun fire from low-flying aeroplanes.

Further costly assaults were made, again with some success, on Sept. 26, Oct. 4, and Oct. 9. A further attack on Oct. 12 coincided with the return of violent rain, and brought trifling result and heavy loss. A large-scale attack planned for Oct. 20 was also frustrated by heavy rain, Gheluvelt being taken and lost because British rifles were choked with slime. Finally on Nov. 6, again in a downpour, Canadians fought their way through the swamps into Passchendaele village. After this the offensive gradually petered out.

#### Results of the Battle

Over 25,000 shells were used in the British bombardment. Ludendorff admitted later that until mid-September the persistence of the attack, with its reckless disregard of casualties, was not without its impression on the German army; after that date there was a change in German tactics, by which they left unoccupied a considerable zone in front of their main line and thereby reduced casualties. Total British casualties amounted to nearly 400,000 (including 17,000 officers). German casualties on the whole front opposite to the British from July 31-Dec. 31 were less than 300,000. Ten weeks' fighting had brought Haig about one sixth of his first objective, five miles only of the 18 m. ridge. The new British line formed a narrow and dangerous salient; and all the ground was lost in the German advance of the following April. Moreover, the damage to British morale was serious. The army had been ordered to achieve the impossible, and there was a diminution of confidence in leadership.

There has been considerable controversy in the attempt to fix



the responsibility, first for launching, then for continuing the battle. Sir W. Robertson, as C.I.G.S., accepted responsibility, while blaming the shortcomings of staff intelligence reports. Undoubtedly there was an inclination at G.H.Q. to override the advice of the men on the spot, and to discredit their views as exaggerating the facts. Gough advised the abandonment of the offensive in mid-August, but Haig was still optimistic at the end of Sept., hoping that with improving weather the cavalry could be utilised even sooner than originally thought. The war cabinet hesitated to override the views of their military strategists, even if they had been given all the facts, which they were not. Support had been given to the original plan only on condition that the offensive would be abandoned at once if it became clear that it would not succeed. Lloyd George advised abandonment in mid-Aug. and again in Oct., but Robertson supported Haig in an optimistic view. To have overridden G.H.Q. would have entailed the dismissal of both Haig and Robertson, a step that would have seriously disturbed public morale at home, especially as the press was reporting each costly, painful advance as a great British victory. A further consideration, by which Haig and Robertson set great store, was that Jellicoe, as first sea lord, had said that unless the Flanders submarine bases were cleared before the end of the year, the whole British war effort would be jeopardised.

This most terrible, costly, and futile battle of all time left a lesson which was not forgotten. Its warning and its bitter memory probably played an indirect part in contributing to the relatively small British casualty lists of the Second Great War. Consult War Memories, D. Lloyd George, 1933-36 (Chap. LXIII); also Soldiers and Statesmen, Sir W. Robertson, 1926; Field Marshal Earl Haig, Brig.-Gen. J. Charteris, 1929.

Gordon Stowell

**Passenger Pigeon** (*Ectopistes migratoria*). Species of pigeon found in N. America, notable for its long wings and long, narrow tail. It formerly occurred in vast flocks, and at its nesting sites every tree for many miles was laden with the nests. It was largely shot for the table, and in one year 15,000,000 birds were procured in Michigan and Pennsylvania. It almost disappeared in 1888 and is now extinct, the last known survivor dying in the

zoological gardens at Cincinnati in 1914. See Pigeon.

**Passe-partout** (Fr., passes everywhere). Term used in English as well as in French, both literally and figuratively, in the sense of an expedient for obviating difficulties. Thus it is applied to a master-key, i.e. to a key which opens a series of locks, the subordinate keys opening only one lock each; to an adjustable picture frame or mount; to strips of adhesive paper for the easy mounting of pictures or photographs; and, in printing and engraving, to a stock border which may be used with different centres.

**Passepied** OR TRIHORIS, also corrupted in English as Paspy, or passy-measure. An old dance of Breton origin, a variety of the Branle, in which dancers imitated shepherds, laundresses, etc., it was brought to Paris before 1600 and remained popular for nearly 200 years. The French ballets of the 17th and 18th centuries contain many examples. The music is in triple time, similar to that of the minuet, but much quicker.

**Passeriformes**, PASSERINE OR PERCHING BIRDS. Order of birds, distinguished by the presence of four toes, three in front and one behind, a certain type of palate, and the habit of constructing elaborate and finished nests, etc. The section includes the finches, warblers, thrushes, crows, swallows, shrikes, etc., numbering thousands of species and more than half the existing birds. They are named after *passer*, Latin for sparrow, a member of the order.

**Passfield**, SIDNEY JAMES WEBB, 1ST BARON (1859-1947). English sociologist. Born in London, July 13, 1859, he entered the civil service in 1878. In 1891 he resigned to devote himself to municipal politics, and the next

year was elected to the L.C.C., of which he was a member for eighteen years. A leading authority on economics, sociology, and municipal affairs, he helped to found the London School of Economics, of which he was professor of public administration.



Lord and Lady Passfield, British sociologists. Lady Passfield continued to be known as Mrs. Sidney Webb up to her death in 1943

1912-27. An original member of the Fabian society, he served on many commissions and committees, and was responsible for the minority report of the poor law commission of 1909, which deeply influenced legislation. He founded the New Statesman in 1913. In 1922 he was elected to parliament as Labour member for Seaham, and in 1929 was created a baron. He was president of the board of trade in the Labour administration of 1924, secretary for the dominions, 1929-30, and for the colonies, 1929-31. He was awarded the O.M. in 1944, and died Oct. 13, 1947.

A prolific writer on sociology, his publications included Socialism in England, 1890; The London Programme, 1892; Towards Social Democracy?, 1916; Story of the Durham Miners, 1921; and in conjunction with his wife (v.l.) The History of Trade Unionism, 1894; Industrial Democracy, 1897; a series of studies of English Local Government, 1908-22; The State and the Doctor, 1910; A Constitution for the Socialist Commonwealth of Great Britain, 1920; English Poor Law History, 3 vols., 1927-29; Soviet Communism: a New Civilization? 1935; The Truth About Soviet Russia, 1942.

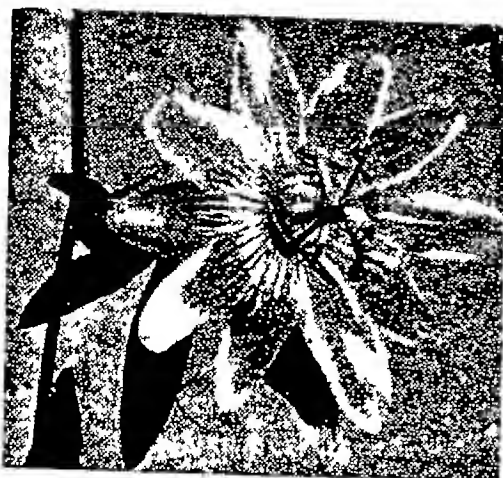
In 1892 Webb married Beatrice Potter (1858-1943), an associate in the Fabian society, joint author of the minority report of the poor law commission, and a sociologist in her own right. The Webbs were among the mainstays of the Labour movement. After Sidney Webb's elevation to the peerage, his wife expressed her desire to continue to be known as Mrs. Webb. Besides collaborating with her husband, she wrote My Apprenticeship



Passenger Pigeon. Extinct species formerly common in N. America

ship, 1926; Our Partnership, 1948. She died April 30, 1943.

**Passifloraceae.** Family of trees, shrubs, and herbs sometimes called the Passion flower family. They are natives of tropical and sub-tropical regions, especially of S. America. They have mostly alternate leaves and showy, regular flowers. The fruit is a many-seeded berry or capsule, in some species edible.



Passion Flower foliage and bloom.

**Passing Bell.** Name given to the solemn tolling of a bell, usually of a parish church, at the death or "passing" of a parishioner. The tolling customarily opens with a single note for a man, two for a woman, three for a child.

**Passing of the Third Floor Back, THE.** Morality play, written by Jerome K. Jerome. It was produced Sept. 1, 1908, at the St. James's Theatre, London. The story tells how "the stranger," an incarnation of Christian influence, appears in a Bloomsbury boarding-house and transforms the characters of all the inhabitants. Sir Johnston Forbes-Robertson played the leading part, the stranger. Although somewhat dated in its detail as well as its style, the play has been kept alive by repertory and amateur performances.

**Passion, THE.** Term used in a religious sense for the sufferings and Crucifixion of Jesus Christ. It early became a custom in the Church to recite the story of the Passion as told in the Gospels, the narrative portion being sung to Gregorian tones by a tenor, while individual speeches were allotted to other selected voices and the answers of the crowd were sung by a chorus. These musical compositions were known as Passion music.

Among the earliest composers to produce definite Passions in this form were the Spaniard Tommaso Ludovico da Victoria (1540-1613) and the Italian Francisco Soriano (b. 1549). A little later the German Heinrich Schutz (1585-1672) wrote four Passions and the Story of the Resurrection of Christ. Another German, R. Keiser (1673-1739), introduced the chorale. German genius, profoundly influenced by the Reformation, was particularly sensitive to this form of music, and in the hands of J. S. Bach Passion music attained its highest development. Elsewhere it was gradually modi-

fied and assumed the form of oratorio (*q.v.*).

**Passion Flower** (*Passiflora*). Large genus of climbing herbs and shrubs of the family Passifloraceae,

natives chiefly of the warmer parts of America. They have variously lobed or undivided leaves, mostly alternate, and stout tendrils by which they climb. The flowers, which are of remarkable structure, are often large and showy, coloured blue, purple, red, white, or yellow. The cup-shaped receptacle bears 4-5 sepals, an equal number of petals, and a corona of very many spreading filaments. The sexual organs are borne above the corona on an organ known as the gynophore; there are 4-5 spreading stamens with large anthers, and above them is the ovary supporting the clubbed styles. The name (*flos passionis*) is due to the fact that the early Jesuits, with a little straining of the facts, saw in the flower numerous emblems of the Crucifixion.

**Passion Fruit.** Fruit of the granadilla species of the passion flower (*v.s.*). It is about 2 ins. in diameter, containing within a hard, shrivelled, stringy shell a gelatinous pale yellow pulp with greenish pips. It is cultivated in Australia, where it is used to flavour ice cream, and in the W. Indies, where it is known as the sweet calabash.

**Passionists.** R.C. order of priests and laymen, entitled the Congregation of Discalced Clerks of the Most Holy Cross and Passion of Our Lord Jesus Christ. It was founded about 1730 by S. Paul of the Cross (1694-1775), and was formally approved by the pope in 1741. Its special work is to conduct missions and retreats, and to undertake parochial work when desired by the bishop. The usual life vows are taken. The order came to Great Britain in 1841, and has several houses there, the headquarters being at Highgate, London. In America it has over a hundred houses.

**Passion Plays.** Scriptural plays developed in France and Germany in the Middle Ages. Derived from old Easter plays, they were enacted not in the churches but by brotherhoods under clerical direction in the open market, representing the Passion of Christ and employing some-

times hundreds of amateur actors. Variations of the texts are preserved: the Confrérie de la Passion (Paris), the 14th century St. Gall, the 1514 Heidelberg, the Bolzano, Eger, Hamburg, Hildesheim, and other plays. In modern days the Oberammergau (*q.r.*) play, held every ten years, is the most famous.

**Passion Week.** In the ecclesiastical year, the week following Passion Sunday, or the 5th Sunday in Lent. The name is sometimes applied to Holy Week (*q.v.*).

**Passive Resistance.** Act of resisting a law or system of government without recourse to active or militant methods. It is usually resorted to on conscientious grounds, which may be purely moral, or in which political and national considerations are involved. The refusal of Quakers and others to pay tithes and impositions of the Church of England is an example of the former, and there were many examples and forms of the latter in the Nazi-occupied countries of the Second Great War. The civil disobedience and boycott movement of Gandhi in India was passive resistance, as was refusal to undertake military service in Great Britain. The pacifist proposal that in time of war civilians should interpose themselves unarmed between the combatants, suggested passive resistance in an extreme form.

The term is historically associated with the Free Church passive resistance movement, which originated with the passing of the Education Act of 1902. These Free Churchmen consistently objected to pay a rate which provided for sectarian teaching in voluntary schools. They objected to pay that portion of their local rate devoted to education. Some paid when summoned after making a protest in public. Others refused to pay when summoned, and allowed their goods to be distrained upon for the amount in question. Others refused distraint and underwent regular terms of imprisonment. The movement died away after the Liberal govt. came to power in 1906, though the Act remained on the statute book.

**Passmore Edwards Settlement.** Name by which the London social welfare institute, the Mary Ward Settlement (*q.v.*), London, W.C., was known from 1897 to 1920. It was named after J. Passmore Edwards (*q.v.*).

**Passover** (Heb. *pesach*; Gr. *pascha*). Ancient Jewish feast. Called in the Bible the Lord's



**Passover**, and instituted at the time of the exodus, it was so named from the passing over by the destroying angel of the thresholds of the Israelites, red with the blood of the sacrificial lamb, when all the first-born of Egypt were smitten (Ex. 12). It was afterwards and still is observed as a symbol of the deliverance and of the beginning of harvest, the seven days of observance beginning on Abib or Nisan 14. The whole feast is also called the festival of unleavened bread. In modern times the festival closes with the words, "Next year in Jerusalem." It was observed by Christ the night before His crucifixion, when He instituted the Eucharist; and He is called "our Passover" (1 Cor. 5, vv. 7-8). See *Easter*; *Last Supper*; consult *History of the Jewish Church*, A. P. Stanley, 1876; *Hebrew Feasts*, W. H. Green, 1886.

**Passport** (Fr. *passeport*). Warrant of safe conduct and licence to travel issued in the name of a sovereign state to its subjects wishing to visit foreign countries. British subjects require passports when travelling to or from British dominions or colonies. In international law a passport is a document issued by a belligerent permitting foreigners to travel within its territory. Every country has the sovereign right to regulate the admittance or exclusion of foreigners to or from its territories. Until the First Great War, passports were not required for travel to most European countries or the U.S.A., but since then they have become necessary for all British subjects leaving the U.K. and all foreigners entering it. They must be shown both to the British authorities at the home port and to the foreign authorities when arriving in or leaving the other country. The need for a visa (*q.v.*) on passports was mutually abolished during 1947 between the U.K. and France, Belgium, Luxemburg, the Netherlands, Denmark, Norway, Sweden.

Passports are issued to British subjects on the recommendation of a banker, mayor, magistrate, minister of religion, barrister-at-law, physician, etc., resident in the U.K. Two unmounted copies of a recent photograph certified by the individual recommending him, of which one is attached to the document, are required. Passports, for which a charge is made, are obtained from the Passport and Permit Office, Clive House, Petty France, Westminster, S.W.1, from branches at 36, Dale Street, Liverpool, 2, and

10, Bothwell Street, Glasgow, C.2. Joint passports for husband and wife (with their children under 16) if travelling together are issued. A passport is valid for five years, and may then be extended for a further five years, after which a new one must be obtained. Employment exchanges can supply information about current passport regulations.

**Passy**. A western suburb of Paris, France. Near the Bois de Boulogne, it extends from the Chaillot (Trocadéro) to the fortifications, and is a residential quarter. See *Paris*.

**Past and Present**. Study of social and political conditions by Thomas Carlyle. It was first published in 1843. Developing ideas earlier expressed in *Sartor Resartus* and *Heroes and Hero Worship*, it discusses the problems of capital and labour, aristocracy and people, as they appeared in the first half of the 19th century, and contrasts them with social conditions in the Middle Ages, illustrated by the chronicle of the abbey of Bury St. Edmunds, written by Jocelin de Brakelond (c. 1200).

**Pastaza** OR **PASTASSA**. River of S. America. Rising in the Andes and flowing generally S.E. through Ecuador for some 400 m., it joins the Marañon in Peru 30 m. W. of the point where the last-named river receives the Huallaga.

**Paste** (prob. Gr. *pastē*, barley broth). Specifically a plastic mass made from flour and water; generally any mixture of similar properties, *e.g.* adhesive made from flour and/or starch and too thick for liquid flow. Paper-hangers' and bookbinders' paste is usually made from flour with a small amount of alum added.

The term is also used for the glass preparation used in making imitation gems, and generally for any soft plastic mass, *e.g.* the clay of potters and the mixture of synthetic resins and filler made up and put into moulds for hardening into the required shape by heat and pressure.

**Pasteboard**. Paper pasted together to make thick sheets. After pasting it is pressed, dried, calendered, and cast into moulds. It is largely used as mounts for pictures. Bristol board is a finer pasteboard for pen-and-ink drawing. The word also denotes the wooden board upon which paste crust is rolled. See *Cardboard*; *Strawboard*.

**Pasteur**, Louis (1822-95). French biologist. Born at Dôle, Dec. 27, 1822, and educated at the



Louis Pasteur,  
French biologist

École Normale, Paris, he was by 1857 its scientific director. In 1863 he was appointed to the École des Beaux Arts as professor of geology, physics, and chem-

istry, and from 1867 to 1889 he was professor of chemistry at the Sorbonne. He established the Pasteur Institute in Paris, 1888, and remained its director until his death, Sept. 28, 1895.

Pasteur was one of the most brilliant investigators of the 19th century. He first attracted notice by his solution of the problem presented by isomerism (*q.v.*), which ultimately led him to the discoveries connected with fermentation, with which his name is universally associated. In connexion with the latter he showed that vinous, acetic, and lactic fermentations were caused by micro-organisms existing in the air, and he formulated methods for the prevention of "diseases" in wines, beer, vinegar, etc. At the request of the French government he undertook a study of silkworm disease, indicated the bacterial cause and cure, afterwards isolating the bacillus of anthrax, an epoch-making discovery which led to his preparation of vaccines for various diseases, *e.g.* fowl cholera, rabies, and diphtheria. These last results, which have been extended by followers of Pasteur, have left their imperishable mark on preventive medicine throughout the world. The more dramatic aspects of his work were brought out by a film, in which Paul Muni played Pasteur, shown 1936. See *Bacteriology*; *Hydrophobia*; *Milk*.

**Bibliography**. Pasteur and after Pasteur, S. Paget, 1914; Lives, G. T. Hallock and C. E. Turner, 1930; P. Compton, 1932; R. V. Rudot, 1937.

**Pasteur Institute**. Research laboratory established for the purpose of combating hydrophobia; named after Louis Pasteur. The first and most important, L'Institut Pasteur, was erected in Paris by public subscription, and opened Nov. 14, 1888.

Subsequently other Pasteur institutes were established throughout Europe, the U.S.A., etc., including one at Kasauli, in the Himalayas.

**Pasteurisation**. Method of making wine, milk, and other liquids bacteriologically sterile by heating.

The process is named after Pasteur, who showed that sufficient heat killed all micro-organisms. There are two methods: one in which milk is held at a temperature of 145–150° F. for half an hour; the other in which milk is heated to 162–165° F. for 15 secs. In both methods the milk must be immediately cooled to 55° F.

**Pasto.** City of Colombia, the capital of the dept. of Nariño. It stands at an alt. of 8,510 ft., at the foot of Galeras (alt. 14,000 ft.), 140 m. N.E. of Quito. It is on the Pan-American Highway, and is the seat of a bishopric. It makes decorated wooden bowls and hats. Founded by Pizarro in 1539, it was twice destroyed in the wars of independence, and by an earthquake in 1827. Pop. (1951) 80,615.

**Paston Letters.** A series of letters and other documents written 1422–1509, most of them addressed to or written by members of the Paston family. About 1400, the Pastons, of a village of that name near North Walsham, Norfolk, began to acquire land and influence in the county. William Paston (1378–1444) was justice of the common pleas under Henry VI. His son John (1421–66) acquired by doubtful means Caister Castle and the other estates of Sir John Fastolf. Sir John Paston (1442–79), a courtier of Edward IV, went over to the Lancastrians.

The documents, numbering nearly 1,200, form an invaluable record of the political, social, and economic life of the time, and of its manners and morals. *Consult* The Paston Letters, 3 vols., ed. James Gairdner, 1872–75.

**Pastor.** Bird, sometimes called the rose-coloured starling (*Pastor roseus*). The plumage is pink on the back and under parts, violet-black on the head, neck, and tail, greenish-black on the wings. It nests in W. Asia and S.E. Europe, and feeds on locusts. At times it migrates in large numbers to W. Europe; occasional specimens are met in England.

**Pastoral.** Literary term denoting poetry, romance, or drama setting forth the shepherd's life in a more or less conventionalised or idealised fashion. Originating in the idylls of the Greeks of Sicily, notably Theocritus, and imitated by Virgil in his Eclogues, pastoral poetry was revived by the Renaissance poets on the Continent, and in England became something of a new type with The Shepherd's Calendar of Spenser.

Pastoral drama flourished in Italy from the close of the 15th

century, and reached its height with Tasso's *Aminta*, 1573, and Guarini's *Pastor Fido*, 1585, plays which had considerable influence on the pastoral drama in England (cf. Fletcher's *Faithful Shepherdess*, 1610; Jonson's *Sad Shepherd*, 1636). Outstanding examples of pastoral romance are the *Diana of the Spaniard* Montemayor, c. 1559, and Sidney's *Arcadia*, 1590. Pastoral setting or allusion has frequently been a convention in the writing of funeral elegies from Spenser's *Astrophel*, 1586, and Milton's *Lycidas*, to Arnold's *Thyrsis*, 1861.

**Pastorale.** Musical term denoting (1) a 17th-century kind of opera with a rural or idyllic subject; (2) an instrumental piece suggesting by conventional means, such as the use of compound time and of placid and flowing melody, the atmosphere of the countryside (cf. Beethoven's *Pastoral Symphony*, No. 6 in F).

**Pastoralists.** Peoples who rely for subsistence primarily on the products of their herds. True pastoralists are found only in the Old World, where they occupy semi-arid areas, high latitude steppes, and mountain grasslands which are not favourable to cultivation. Few pastoralists are ignorant of the practice of cultivation, but they prefer the greater freedom of their own way of life, enjoying the cultural prestige or military superiority (cf. the Masai) associated with it, or its superior social status (cf. the Bahima).

The types of livestock on which the economy depends vary from people to people; none is entirely dependent on one type. The camel is predominant in the Sahara-Arabian region, the bactrian camel, a beast of burden, from the Caspian Sea to Mongolia. Sheep and horses are the dominant food providers in the central Asian steppes, with cattle in the more permanent pastures to the N.W. Domesticated reindeer are confined to the coniferous forests and tundra of northern Eurasia. Cattle are the main livestock over Africa S. of the Sahara, sheep, goats, and donkeys occupying a minor position.

All pastoralists use meat, some also blood, as food; all use hides. But many pastoralists are ignorant of other uses: e.g. the milking of females, the conversion of milk into storable dairy products, the use of hair and wool as a textile, the use of animals as beasts of burden or for draught or riding. Among some religious or social

prohibition inhibits certain potential uses. The eastern Bantu use game as a source of meat, conserving cattle as a token of wealth.

Though pastoralism is often a less stable economy than cultivation, pastoralists show a strong resistance to change. But their psychological attitudes are by no means indelible: for while the pastoralist is not easily converted to a settled existence, in many areas he has been incorporated in more settled communities, e.g. in northern Syria; and cultivating groups have sometimes taken to pastoralism (e.g. the Khirghiz), a change perhaps associated with immigration into an area less suited to cultivation or with unsettled political conditions.

The movements of pastoralists are not random. Every group has a well-defined territory, the bounds of which it dare not transgress, and within it there are selected sites which are inhabited each year for an appreciable time. Only in time of adversity does a pastoral people leave its home territory, and it may move rapidly over a great distance: under a leader of strong personality, it may, by its superior mobility, inflict spectacular damage on neighbouring settled peoples (cf. Attila with his Huns).

**Pastoral Letter.** Written communication by a bishop to the clergy and laity of his diocese on matters of Church organization and government, so called from the fact that a bishop is regarded as a spiritual shepherd. The Epistles of S. Paul to Timothy and Titus are pastoral epistles.

**Pastoral Staff.** *See* Crosier.

**Pasture.** Land used for grazing. Some pasture lands are uncultivated, some are cultivated. Uncultivated pastures are represented in the U.K. and W. Europe by rough and hill grazings; in S. Africa by the veld; in N. America by the prairie; in S. America by pampa; and in Australasia by the montane tussock grasslands and others. Most uncultivated pastures have been greatly modified by human action, especially during the 19th and 20th centuries.

Cultivated pasture, although not nearly so extensive in total area, is, in the aggregate, much more important agriculturally. Usually developed in countries having relatively humid climates, it replaces forest or woodland. Cultivated pasture is characteristic of large areas throughout the U.K. and in other parts of Europe, in New Zealand, in the humid maritime districts of N. America, in



parts of Southern Australia, and in the Cape prov. and Natal, S. Africa.

Cultivated pasture may again be sub-divided into permanent pasture and leys (*see* Ley Farming). Much permanent pasture has been cultivated at one time or another.

Most leys have ceased to function as leys after the 10th to 15th year, depending on situation and treatment. On poor soils or under indifferent farming, the ley is ready for ploughing after the fourth or fifth year from sowing. The outrun ley is no longer highly productive and may, in this respect, be even less so than is permanent grass. The ley ceases to be a ley when the species first sown in it are replaced by the indigenous grasses and herbs.

#### Plants used for Pasture

The chief pasture plants used in seeds mixtures for leys are ryegrass (*Lolium* spp.), cocksfoot (*Dactylis glomerata*), timothy (*Phleum* spp.), fescue (*Festuca* spp.), the clovers (*Trifolium* spp.), and the medicks (*Medicago* spp.). In some countries and for special conditions, use is also made of such plants as foxtail (*Alopecurus* spp.), meadow grass (*Poa* spp.), dogstail (*Cynosurus* spp.), Bent (*Agrostis* spp.), Brome (*Bromus* spp.), oat grasses (*Avena* and *Arrhenatherum* spp.), bird's foot trefoil (*Lotus* spp.), sweet clover (*Melilotus* spp.). In other countries, notably in Africa, the Americas, India, and certain parts of Australasia, where the climate is hot and with long dry spells, leys are sometimes based on such plants as Rhodes grass (*Chloris* spp.), star grass (*Cynodyn* spp.), paspalum (*Paspalum* spp.), panicums (*Panicum* spp.), elephant grass (*Pennisetum* spp.).

Pasture may be said ecologically to be a pioneer form of vegetation; the tendency in natural development is always towards regeneration of scrub, woodland, or even forest. The farmer aims at preventing this progression by maintaining open pasture land on which he feeds his livestock. To do this effectively and to maintain his pasture in good condition, the farmer has to pay special heed to the proper management of the pasture lands, whether they be cultivated or uncultivated. To maintain high production from season to season, pasture land must be adequately manured (although in many parts of the world the application of manures is not at present warranted for economic reasons). In the case of cultivated pasture, special care is taken to

sow proper seeds including only those species in the seeds mixture which are capable of producing the desired class of pasture.

In 1947 the total area of pasture land of all descriptions in England and Wales was 19,422,000 acres. Of this area 5,567,000 acres were uncultivated heaths and moors, mostly at high elevation; 10,252,000 acres were permanent pasture; 3,603,000 acres were under leys of all kinds. In Scotland in 1947 there were 10,945,000 acres of rough grazings (uncultivated), 1,130,000 acres of permanent pasture, and 1,424,000 acres of ley. Between 1939 and 1943, England, Wales, and Scotland ploughed up about 6 million acres of permanent pasture; during 1944-47 there was little further ploughing up, so that in 1947 England and Wales together still had 10 acres of permanent pasture to every three acres under ley, although the latter is known to be, on the average, at least twice as productive as ordinary old pasture.

Among overseas countries New Zealand is in a foremost place in the production of meat, butter, cheese, and other grassland products. She has realized fully that grass, which provides the best and cheapest food for cattle and sheep, is a true crop and, further, that pasture must be farmed well and intelligently if it is to produce at the best economical level of output.

William Davies, D.Sc.

**Patagonia.** Extensive region forming the southern extremity of S. America and belonging to Argentina and Chile. It extends S. from the Rio Colorado to the Strait of Magellan, which divides it from the islands of the Tierra del Fuegian archipelago. Originally claimed by both Chile and Argentina, a treaty between these countries was ratified in 1881, which apportioned the territory E. of the Andes to Argentina and the W. coastal region to Chile.

Argentine Patagonia, divided into the provs. of Rio Negro, Chubut (between 42° and 46° S. lat.), and Patagonia, is bordered on the W. by the Andes, which constitute the water-parting of the Atlantic and Pacific systems, with an alt. of from 3,000 ft. to 6,000 ft.; the range is broken by several lakes lying partly in Argentina and partly in Chile. The terrain slopes in a succession of terraces towards the E., interspersed by numerous ravines and valleys. The chief rivers are the Colorado, Rio Negro, Chico, Chubut, Gallegos, and Santa

Cruz, mostly impeded by rapids, and there are a large number of salt lakes and lagoons. Though arid, sterile, and bush-covered for the most part, the valleys and margins of rivers in the N. portion are fertile. The climate is cool and violent winds prevail.

In Argentine Patagonia there are estimated to be almost 20,000,000 sheep, and the export of wool averages 50,000 tons per annum. There are large canning plants. Mammals include guanacos, armadillos, viscachas, pumas, foxes, and skunks; among the numerous birds are condors, vultures, hawks, partridges, rheas, and flamingoes. The native Indians, noted for their tall stature, are nomadic and thinly scattered over the territory. The most important tribes, the Tehuelches and Gennakens, are fast dying out. Area, including the E. section of Tierra del Fuego (part of Patagonia prov.), 331,203 sq. m. The pop. is estimated at 365,000.

Chilean Patagonia is a coastal strip W. of the Andes, consisting of the provs. of Chiloe and Magallanes, which lie S. of the prov. of Llanquihue. The coast is fringed with innumerable islands, including the archipelagos of Chonos, Queen Adelaide, and Madre de Dios. The coasts are steep and rugged, and cleft by numerous fjord-like openings. The lower slopes of the mountains are densely forested, yielding valuable timber. There are no rivers exceeding 15 m. in length. The climate is raw and damp, and in the S. snow and sleet are of almost daily occurrence. Its area is 72,334 sq. m. Pop. about 40,000, of whom one-third are foreigners. One-fifth of the cultivated land is British-owned, and 90 p.c. of the larger sheep farms (3,500,000 head of sheep) are managed by Scots. There are large meat packing and refrigerating plants. Coal is extensively mined.

First seen by Magellan in 1520, Patagonia was afterwards visited by various Spanish and English explorers. Scientific explorations were also made by Darwin, Fitzroy, and several Argentine travellers. *See* Chile.

**Pataliputra.** Capital of the Magadha kingdom in ancient India. Extending for 9 m. along the right Ganges bank, between the modern Bankipur and Patna, it is now submerged beneath 14 ft. of alluvium. Completed by Udaya, about 450 B.C., it was visited about 300 by Megasthenes, ambassador of Seleucus to the court of

Chandragupta, of whose dynasty it was the capital. The Greeks knew it as Palibothra. Remains of its palisaded walls, whose many gates and towers he described, have been recovered. Asoka (*q.v.*) added masonry walls, and held there the 3rd Buddhist council about 246. By the 7th century it had become a heap of ruins. On its site stands Bankipur, the W. extremity of the city of Patna.

**Patán.** Town of Mehsana dist., Bombay, India, 62 m. N.W. of Ahmadabad. One of the oldest towns in Gujarat, it manufactures weapons, silks, and cottons, contains over 100 Jain temples, and is noted for its Jain palm leaf MSS. Pop. (1951) 43,044.

**Patani.** Part, formerly a prov. of Siam. It is in the S.E., on the S. China Sea, with a land boundary with Malaya. It is drained by the Patani, the largest of many N-flowing streams. Tin, lead, gutta-percha, and timber are exported. It was formerly an independent state, dominating all the E. coast of the peninsula, but was annexed to Siam in 1832. After the Second Great War a movement was started among the 95 p.c. Malay pop. to ally Patani with Malaya or with Indonesia, but the peace treaty with Siam, 1946, left the boundaries as they were at Dec. 7, 1941. Pop. 310,000.

**Patás Monkey** (*Erythrocebus patas*). Large and brilliantly coloured guenon, native of W. Africa.



**Patás Monkey of West Africa**

It is an agile, long-tailed species, of a foxy red colour on the upper parts and white below. The face is blue, with long hair on the cheeks, a narrow black band above the eyes, and moustache-like lines of the same colour on the upper lip. The length of head and body is about 16 ins., and that of the tail the same.

**Pataudi,** MUHAMMAD IFTIKHAR ALI KHAN BAHADUR, NAWAB OF

(1910–52). Indian cricketer. This ruler of a small state in the Punjab was born March 17, 1910, and was awarded his cricket blue at Oxford in 1929. Two years later he made a record score in an Oxford v. Cambridge match—238 not out. He qualified for Worcestershire in 1932 and went with the English test team to Australia. In 1934 he also opposed the Australians and headed English batting averages. When an Indian team toured England in 1946 the nawab was captain, but failed to repeat the brilliance of his earlier play. He died Jan. 5, 1952.

**Patay.** Village of France. In the dept. of Loiret, it is 13 m. N.W. of Orléans. Here a battle was fought between the English and the French, June 19, 1429. Joan of Arc was continuing her victorious career, and to check her the duke of Bedford sent out a force from Paris to the assistance of the English near Orléans. Under Talbot, this reached Patay where it learned that the English leader, the duke of Suffolk, was a prisoner. Moving forward, the English were engaged by the French and defeated; Talbot was made prisoner, and only a remnant of his army got back to Paris.

**Patch,** ALEXANDER MCCARRELL (1889–1945). An American soldier. The son of an army officer, he was born Nov. 23, 1889, in Arizona, and graduated from West Point in 1913. He served in France in the First Great War. Promoted maj.-gen., 1942, he commanded the troops who relieved the marines on Guadalcanal in 1943. In 1944 he led the U.S. 7th army, which on Aug. 15 landed in S. France, and was promoted lieut.-gen. His troops drove N., made contact with Gen. Patton's 3rd army, and joined the assault on Germany. Recalled to the U.S.A. and named head of the board set up to study post-war army requirements, Patch died from pneumonia on Nov. 21, 1945.

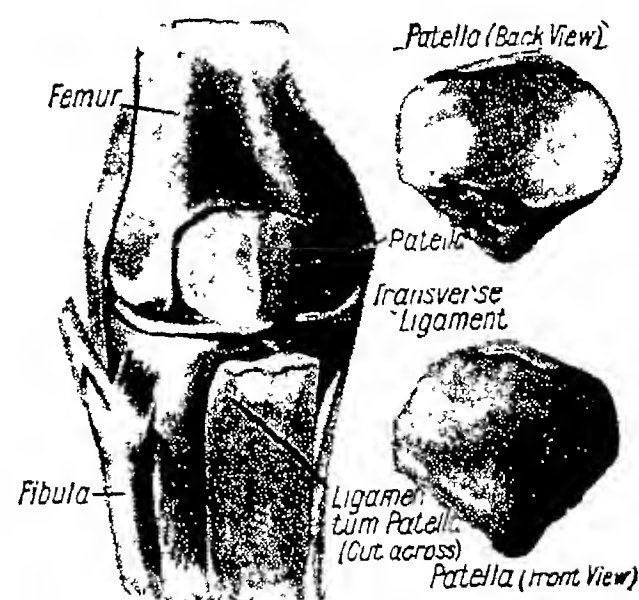
**Patel,** VALLABHBHAI JHAVERBHAI (1875–1950). Indian politician. Born at Karamaad, Oct. 31, 1875, he was educated at Nadiad high school and became a district pleader at Godhra; after study in England he was called to the bar at the Middle Temple, returning to practice at Ahmadabad, where, 1924–28, 1928–32, he was president of the local municipality. In 1916 he became associated with Gandhi, and led the Bardoli "no tax" campaign. He was president of the Indian national congress in 1931, chairman of its parliamen-

tary sub-committee, 1935–42, and several times gaoled for his share in organizing civil disobedience. His violent denunciations of the British in 1945 were held responsible for outbreaks of violence. In the interim government formed in 1946, he held the portfolio of home affairs, becoming deputy prime minister after the transfer of power in 1947, with the portfolios of home, information, and broadcasting, and, later, of the state dept. In the last capacity, he was responsible for the rapid integration of the princely states into the Indian Union. He died suddenly in Bombay, Dec. 15, 1950.

**Pateley Bridge.** Market town of the W. Riding of Yorkshire, England. It stands on the Nidd, 10 m. S.W. of Ripon, and has a rly. station. The chief industry is the quarrying of stone, and there are old lead-mines. Near are caverns with stalactites and stalagmites. Market day, Sat. Pop. 7,000.

**Patella** OR KNEE-CAP. Sesamoid bone, *i.e.* a bone developed in the tendon of a muscle, situated at the front of the knee-joint. It is roughly triangular in shape. The posterior surface is covered with cartilage, and articulates with the femur or thigh-bone. The upper margin passes into the tendon of the quadriceps extensor or large muscle forming the front of the thigh. From the lower margin springs the infra-patella tendon, by which the bone is fastened to the anterior surface of the tibia.

Dislocation of the patella may be outwards, inwards, or sideways, the first being much the commonest form. Reduction is effected by manipulation. Fracture of the patella may be the result of direct violence, or may follow a vigorous muscular effort, such as may be made in an endeavour to prevent a fall, the bone breaking transversely across the middle; wiring of



**Patella.** Left, knee-joint from the front, showing position of patella; right, front and back view of bone



the bony parts is usually a necessary part of treatment.

**Paten.** In the service of the Eucharist, the plate on which the consecrated bread is placed; in the Mass, the plate on which the Host is laid. The term also describes the covering, usually of gold or silver gilt, of the chalice used at these services.

**Patent** (Lat. *patere* to lie open). Official document issued by the sovereign conferring an exclusive right or privilege. Titles of nobility are conferred by letters patent. A patent is also the sole right for a term of years in the proceeds of an invention, the person who holds such a right being called the patentee.

## PATENT LAW AND PRACTICE

*This article, by a chartered patent agent, deals with a branch of law which is of great importance commercially. See also Company Law; Copyright; Monopoly; Trade Mark*

The patent (Lat. *patere*, to lie open) law of the U.K. may be said to date from the statute of monopolies, 1623. Before the passing of that statute patents were granted by the crown with a view to improving the economic condition of the country, industry being encouraged by prohibiting or restricting competition. The grant of monopolies freed from competition led to abuses prejudicial to the state, and was followed by their restriction by statute. According to the statute of monopolies the grant of a patent was restricted to the "first and true inventor," who, according to present-day practice (Patents Act, 1949), includes not only the actual inventor, but the first importer of an invention into the U.K.; an assignee can also apply. The patent dates from the date of filing the complete specification, with priority from the filing of the provisional specification, if any, and the applicant for a patent in any of a number of overseas territories (including most industrially important countries) or his assignee can, by making application in the U.K. within twelve months of his first application, obtain a patent with priority from that application.

The subject matter of a valid patent must comprise a manner of new manufacture, or method of testing applicable in manufacture. Moreover it must not be contrary to law or morality or well established natural laws. Novelty alone does not necessarily imply invention, and of itself is insufficient to sustain a patent.

A patent is invalid if before its priority date the invention has been publicly disclosed in the U.K. either by a prior user or by public description; it is also invalid if the specification is inadequate or ambiguous. A British patent secures to the grantee the exclusive right (in the U.K. only) to manufacture, use, and sell, or to grant

licences for these purposes, and after sealing of the patent an infringer may be restrained and made liable for damages for infringements after the date of publication of the complete specification. An infringement action is brought in the high court, usually the chancery division, and the defendant may plead invalidity as well as non-infringement. Unjustifiable threats of patent proceedings can be restrained and damages can be recovered. A patent has effect against the crown; but govt. depts. and their agents may use patented inventions for crown purposes, subject to the payment of compensation. In the absence of a specific agreement between them, joint patentees may each work the invention independently, but cannot independently grant licences or assign their shares. A patent is transferable by deed, and if an agreement to assign is registered before a patent is sealed, the patent will be granted to the assignee.

In the U.K. an application for letters patent in respect of inventions is made upon forms obtainable at the Patent Office, London, where also the forms which require fees can be stamped. An application may be accompanied by a provisional specification, in which the invention is described (which must be followed within twelve months by a complete specification); or by a complete specification, in which are particularly described the invention and the manner in which it is to be given practical effect.

The complete specification is examined for clarity and a search for novelty among British patent specifications published within 50 years back from the date of the application is prescribed by law, but any other publication known to the Patent Office examiner can be cited. The law gives to the comptroller of patents the power of refusing the grant of a patent when

the invention has been wholly and specifically claimed or described in specifications to which the search has extended or other prior publications cited. Complete specifications can be amended at the instance of the applicant to distinguish an invention from those described in cited prior publications. Alternatively, the comptroller may insert in the specification, by way of warning to the public, specific reference to any earlier publication held to describe or claim an applicant's invention. After completion of the examination and any amendments necessary to overcome objections, the complete specification is accepted and published. An inventor may, before applying for a patent, but after notice to the comptroller, place his invention on view at an exhibition certified by the board of Trade without invalidating, by reason of prior publication, a patent which he may subsequently obtain.

Before a patent is sealed, but after the publication by the Patent Office of the complete specification, interested parties may, within three months, oppose, and, if successful, prevent the sealing of the patent, or obtain an amendment of the complete specification. An opposition can be based only upon one or more grounds which, summarised, are: That the invention has been obtained from the opponent, or someone of whom he is the legal representative; that the application lacks invention; that it has been publicly used or disclosed in a document published in the U.K. before the priority date of the application, that it has been claimed in the U.K. in an application of earlier priority date; or that it is not sufficiently or fairly described in the complete specification. Oppositions are conducted before the comptroller, from whose decision an appeal lies to the patents appeal tribunal. Similar action to opposition may be brought in the Patent Office within 12 months of the sealing of a patent. Action to revoke may be brought at any time in the high court on the above grounds or on certain further grounds.

A specification may, after its acceptance, be amended, either by way of disclaimer, correction, or explanation, provided that the specification, after amendment, does not contain an invention substantially larger or different from the invention claimed before the amendment.

At any time not less than three years after the sealing of a patent, any person may apply for a compulsory licence under a patent on the ground that the protected product or process is manufactured or carried on wholly or in large measure outside the U.K., or that the invention is not being commercially worked or the public demand is not being met on reasonable terms, or that trade or industry is prejudiced by the unwillingness of the patentee to grant licences or by unfair use of the patent. Compulsory licences may be granted at any time under patents relating to food or medicine or surgical or curative devices.

The fees payable for a patent have varied from time to time; in 1958 they were £8, £1 with the application, £4 when lodging the complete specification, and £3 at the time of sealing. No further fees were payable until the expiration of four years from the date of the patent, when the scale of charges became £5 for the fifth year, and rose to £20 in respect of the sixteenth year. By voluntarily having his patent endorsed as subject to compulsory licences (fee £1), a patentee saves half the renewal fees due thereafter.

The normal protection period of 16 years may be extended by the court if it can be shown that the patentee has received inadequate remuneration having due regard to the merits of the invention, or by the court or the Patent Office if he or his exclusive licensee has suffered loss through engagement of the U.K. in war.

**PATENT LAW IN THE U.S.A.** The first patent law in the U.S.A., enacted in 1790, has been several times revised. The Patent Office, previously a branch of the dept. of the Interior, was transferred in 1925 to the dept. of Commerce. A patent for an invention may be granted to the inventor of any new and useful art, machine, manufacture, or composition of matter, or for any new and useful improvement in these classes or for certain varieties of plants (botanical). The patent right in an invention lasts for 17 years and in a design for an article of manufacture for 3½, 7, or 14 years as the inventor may elect. An application must be made by the inventor himself. It must consist of a petition, specification, oath, with a filing fee of \$30 (about £10 14s.) with an extra \$1 for each claim above 20. A fee of the same amount is charged for the issue of a patent. The application is

officially examined to see if it is complete and in the correct form, and search is then made to find if the invention is new. If the application is rejected, an appeal may be made to the board of appeals in the Patent Office, and further, if necessary, to the court of customs and patent appeals. An "interference proceeding" is instituted by the Patent Office if claims are made by different persons to the same invention. If a patent be infringed the patentee may sue in a federal court for the recovery of damages and for an injunction. A patent may not be used to form a combination in restraint of trade in violation of the anti-trust laws.

**Patent Medicine.** Term originally describing a medicinal preparation which had been the subject of "letters patent" under the Great Seal. The first tax on medicines was imposed in 1783, and was followed by other measures until 1812, when the Medicine Stamp Act was passed. This placed a duty on patent medicines, the duty being indicated by a stamp on the box or bottle, etc., in which the preparation was sold. The Pharmacy and Medicines Act (*q.v.*), 1941, abolished both the medicine duties and the medicine vendor's licence; and also made it compulsory to state the constituents of a medicine on the article or its container.

**Patent Office.** Govt. office under the board of trade, supervising the grant of patents. At its offices, 25, Southampton Buildings W.C.2, is the U.K.'s largest scientific library.

**Pater, JEAN BAPTISTE JOSEPH** (1695–1736). French painter. Born at Valenciennes, he studied under Watteau in Paris. A slavish follower of his master's manner, without his delicate and refining touch, Pater was received into the Academy in 1728 as a painter of *fêtes galantes*. He died July 25, 1736.

**Pater, WALTER HORATIO** (1839–94). British critic and essayist. He was born at Shadwell, Aug. 4, 1839, the son of a physician of Dutch ancestry, and educated at King's school, Canterbury, and Queen's College, Oxford. He became a fellow of Brasenose College in 1864,



Walter H. Pater,  
British critic  
Elliott & Fry

and passed most of his life at Oxford, spending his vacations in

travel on the Continent. A visit to Italy in 1865 turned a mind, already under the influence of Ruskin, in the direction of Renaissance art, and inspired a number of essays. These, collected and issued in 1873, obtained wide recognition as *Studies in the History of the Renaissance*.

In 1885 appeared his romance of Marius the Epicurean, an apologia for hedonism in its highest form and the pursuit of beauty. His other publications include *Imaginary Portraits*, 1887; *Plato and Platonism*, 1893; *Greek Studies*, 1895; and appreciations of Wordsworth, Coleridge, Rossetti, and others. A collected edition was published in 1901. Pater strove after a jewelled, polished, and musical prose that should satisfy the most fastidious ear. His matter has stood less well the test of time. He died July 30, 1894. A *Life* by A. C. Benson appeared in 1906, and a study by A. Symonds in 1932.

**Paterno.** Town of Sicily, in the prov. of Catania. It stands at the foot of Mt. Etna, 13 m. by rly. W.N.W. of Catania. Built on the site of the ancient Hybla Major or Galeatis, celebrated for its honey, it has Greek and Roman remains. Its castle, founded in 1073 by Roger I, has a 14th century keep. It was captured by British troops Aug. 5, 1943, in the Second Great War. There is trade in olive oil and wine. Pop. (1951) 35,801.

**Pater Noster** (Lat., Our Father). Latin name for the Lord's Prayer (*q.v.*). Hence the word paternoster is sometimes applied to the larger beads of the rosary.

**Paternoster Row.** London thoroughfare. Known first as Paternoster Lane, it runs W. from Cheapside to Amen Corner, Warwick Lane. It was originally inhabited by the makers of prayer-beads, the dealers in which, known as paternosterers, moved here from St. Paul's Churchyard in the 13th century, and the Row was named after them. The modern Paternoster Row, long celebrated as the home of book publishers, was almost totally destroyed in the fire started by German bombers on Dec. 29, 1940. See Amen Court.

**Paterson.** Township of New South Wales, Australia. It stands on Paterson river, 132 m. by rail N. of Sydney, and is the centre of a dairying and citrus fruit district.

**Paterson.** City of New Jersey, U.S.A., co. seat of Passaic co., and the state's third largest city. It stands on the Passaic R., 15 m. N.W. of New York, and 13 m. above Newark, and is served by



lys. and canal. The river here makes a descent of 50 ft. in one perpendicular fall, providing water power for numerous industries. Known as the Lyons of America, Paterson is the chief silk centre of the U.S.A. Settled by the Dutch in 1679, it was noted for cotton by 1835, and by 1870 was producing half the nation's silk. The Wright aeronautical plant gives other employment. Paterson became a town-ship in 1831, a city in 1851, and is a bishop's see. Pop. 139,656.

**Paterson, ANDREW BARTON** (1864-1941). An Australian poet. Born at Narrambla, N.S.W., he was educated at Sydney grammar school and graduated in law from the university. He contributed poetry to the Sydney Bulletin, and was a war correspondent in the Philippines, S. Africa, and China. Having also been a farmer and fought in Egypt throughout the First Great War, he became in 1922 editor of the Sydney Sportsman. He published his first book of verse, *The Man From Snowy River*, in 1895; *Rio Grande's Last Race*, 1902; *Saltbush Bill*, 1917; and a collected edition, 1921. He also wrote novels and short stories, the best being *An Outback Marriage*, 1906; *Three Elephant Power*, 1917; *The Shearer's Colt*, 1936. His reminiscences, *Happy Despatches*, appeared in 1934. Paterson is perhaps the most widely read Australian poet of his time; his work is of primitive type and wins response by its rhythmic attraction, simplicity of ballad form, descriptions of action, and a background which suggests the magic of the Australian bush. He died in Feb., 1941.

**Paterson, ROBERT** (1715-1801). A Scottish Covenanter, known as Old Mortality. Born near Hawick, April 25, 1715, he was a mason by trade, and spent 40 years travelling round the country, erecting or repairing memorial stones on the graves of martyred Covenanters, leaving his wife and family to shift for themselves. He died Jan. 29, 1801. His eccentric life suggested to Sir Walter Scott the theme of his novel *Old Mortality*.

**Paterson, WILLIAM** (1658-1719). British financier. Born at Tinwald, Dumfriesshire, April, 1658, he left Scotland about 1685. He tramped through England, living for a time in Bristol, and then made his home in the Bahamas. Returning to England about 1690, he entered business life in London, and in 1694 was affluent enough to found the Bank of Eng-

land, the deed on which his fame rests. Less successful was the Darien scheme for the foundation of a new trading port, which he originated after he had left London for Edinburgh. He sailed to Darien in 1698 and returned with the few survivors. Paterson helped to arrange financial relations between England and Scotland after the union in 1707. He died Jan. 22, 1719, having written a good deal on commerce and finance.

**Pathan.** Name popularly denoting the Iranian peoples of E. Afghanistan and N.W. Pakistan who number perhaps 3,750,000. The predominant speech is Pushtu; the harsher dialects are spoken by the aristocratic N. tribes, the softer by the democratic S. tribes. The term also denotes the early Mahomedan dynasties and architecture at Delhi (13th-15th centuries).

**Pathé, CHARLES** (1863-1957). French film magnate. Born at Chevry Cossigny, Seine-et-Marne, Dec. 25, 1863, he spent some time in Argentina, and worked as a waiter and on a fairground. In 1894, at a Versailles fair, he saw Edison's phonograph, bought one, and, with his brother Émile, developed the pathégraph, forming in 1896 the Pathé Frères co. to make and market it. After seeing the early films of the Lumière brothers, Charles became interested and in 1898 at a studio at Vincennes began to make small films and manufacture film. During 1902-08 the company opened agencies in London, N.Y., Berlin, Moscow, Barcelona, Rostov-on-Don, Calcutta, Singapore, and elsewhere; and in 1908 Charles launched the Pathé Journal, the first news reel. Eventually the company owned a world-wide chain of cinemas. Charles retired in 1930 and died in Monaco, Dec. 25, 1957. Émile, who devoted himself to the phonograph side of the business, died at Pau, April 5, 1937.

**Pathetic Fallacy.** Phrase used by Ruskin in *Modern Painters*: "All violent feelings . . . produce . . . a falseness in . . . impressions of external things, which I would generally characterise as the 'pathetic fallacy'."

**Pathetic Sonata.** Composition for the piano by Beethoven, his op. 13, in C minor. It was published in 1799 and dedicated to Prince Lichnowsky. Beethoven's own title was *grand sonate pathétique*. The slow movement has been set as an Anglican chant.

**Pathetic Symphony.** Popular title, first given by the composer's brother, to Tchaikovsky's

6th symphony, in B minor, op. 74. This favourite work is in four movements, the third being in vigorous *alla marcia*. Tchaikovsky was preoccupied with the workings of inexorable fate, and expressed by brilliant orchestration his sense of melancholy and frustration. It was first performed at St. Petersburg, Oct. 28, 1893, a week before he died.

**Pathfinder Force.** R.A.F. bomber unit of the Second Great War. Its duty was to find the target and identify it with coloured flares, so that other squadrons could drop their bombs within the illuminated area. Pathfinder Force, which included the best navigators and pilots in the service, and was commanded by Air Vice-Marshal Bennett, first went into operation on Aug. 18, 1942. Aircraft were provided with a gyroscopic sight which automatically gave the flare dropper a correct line on the target, even when taking evasive action at high speed. By the end of 1943, 1,000 bombers at a time were dropping 2,300 tons of bombs in 30 minutes on a target illuminated by the pathfinders.

**Pathology** (Gr. *pathos*, disease; *logos*, discourse). Science which deals with the causes of disease and the changes produced in the body by it. The investigator uses experimental pathology when he produces a disease in animals and studies its effects. Microscopic investigation of the tissues constitutes histology. The observation of morbid processes in sick persons is termed clinical pathology; the study of changes in diseased tissues is known as morbid anatomy.

**Pathos** (Gr. *pathein*, to suffer). Quality in life and art which touches the emotions, especially pity and compassion. It is usual to speak of pathos as if it were the antithesis of humour, but its appeal is too subtle to be so easily defined. It has, indeed, such affinities with humour that there is more of pathos in some laughter than in some tears. The extremes of tragedy are too terrible to be pathetic; they rise above or fall below an emotion so essentially gentle and personal. The keynote of pathos is simplicity, an entire immunity from self-consciousness and self-assertion. It is "the sense of tears in mortal things," the other side of beauty, youth, and happiness.

Pathos is as inevitably spontaneous as it is elusive. It must be so unpremeditated that it takes

you unawares. It is a wholly artless expression of feeling, and in art must seem so, or it falls from the sublime into the more or less ridiculous.

**Patiala.** Former princely state of India, the largest of the states in the Patiala and E. Punjab States Union (*v.i.*). At the partition of 1947 it acceded to the dominion of India. It had an area of 5,942 sq. m. and a pop. of 2,000,000. Patiala town, capital of the former state and of P.E.P.S.U., was built round the old palace, and is a busy trading centre. It lies W. of Ambala, with which it has rly. connexion.

Sir Bhupindar Singh, maharaja of Patiala (1891-1938), represented his country at Geneva, 1925, and at the London conference of 1930, and was chancellor of the chamber of princes, 1926-30 and 1933-36. He was among the keenest cricketers in India. He was succeeded by his son, Sir Yadavindra Singh (b. 1913), who was rajpramukh of P.E.P.S.U. during 1948-50.

**Patiala and East Punjab States Union (P.E.P.S.U.).** Former state of the Indian Republic, absorbed 1956 in Punjab state. On May 5, 1948, the seven princely states of Patiala, Kapurthala, Jind, Nabha, Faridkot, Malerkotla, and Nalagarh and Kalsia formed a union, inaugurated July 15. P.E.P.S.U. was a rajpramukh's state of the republic from 1950 until its administration was taken over in 1953 by the central govt. The capital was Patiala town. Area 10,120 sq. m. Pop. (1951) 3,468,631, more than a third Sikh Jats.

Punjabi is the language of the area, agriculture the main occupation. Wheat, gram, sugar-cane, and cotton are the chief crops; cattle and buffaloes are bred. Cement, biscuits, and sugar are manufactured, and there are iron and steel works. See Punjab map.

**Patience** OR BUNTHORNE'S BRIDE. Comic opera by W. S. Gilbert with music by Arthur Sullivan. It was produced at the Opéra Comique, London, April 23, 1881, and transferred to the newly-built Savoy, Oct. 10, 1881, being therefore technically the first of the Savoy operas. In all the piece attained a run of 578 performances. It satirised the fashionable folly that attended the aesthetic movement of the period, but its wit still lives even though that particular form of artistic pretentiousness is dead. Famous songs include The Magnet and the Churn, Hey Willow Waly-O, and the Aesthete's song beginning "If you're anxious for to shine."

**Patina.** Green coloration seen on bronze or copper articles which have been exposed to a moist atmosphere for a long period. It is imitated by wetting bronze articles with dilute acids, or applying a paint of copper carbonate. Japanese patina is a glossy black with a violet sheen, or golden sheen with shades of red and grey, according to the metal used.

**Patino, SIMON** (1860-1947). Bolivian magnate. Of Spanish and Indian stock, he was born at Cochabamba in the Andes, and became a clerk in a general store. After acquiring his first mining rights in return for the cancellation of a small debt, he made a vast fortune in tin. At one time his income was estimated at £100,000 a day, exceeding the revenue of the Bolivian government. He became minister in Madrid, and later in Paris. With a fortune estimated at £75,000,000, Patino died at Buenos Aires, April 30, 1947.

**Patio** (Lat. *spatium*, space). Spanish word for the courtyard connected with a house. In metallurgy, the patio process is a method of extracting silver from its ores by amalgamation. It is so called from being carried out on the floor of a patio. The ore is brought on to the patio in the state of thick mud, stacked in a heap inside rough walls of clay, and allowed some days to dry. The walls are then taken down and the ore is spread on the floor, mixed with salt and is turned with spades for two or three days, mules being also

kept moving over it. This operation is continued while first a mixture of iron and copper sulphates and then mercury is added until the amalgamation is complete. The mass is then collected and taken to washing boxes in which the slimes are washed away, leaving the silver amalgam behind.

**Patkai.** Hill range of the Indian sub-continent. It separates Assam from Burma and gives rise to the headwaters of the Chindwin.

**Patkul, JOHANN REINHOLD VON** (1660-1707). Livonian politician. The son of a Swedish officer, he was born July 27, 1660, in a Stockholm prison, where his parents were incarcerated. Patkul was accused in 1692 of high treason against the Swedish government, and was compelled to leave his country. In 1698 he offered his services to Augustus II of Poland, arranged a coalition against Sweden, and then passed to the service of Peter the Great, on whose behalf he negotiated in 1703 an alliance with Augustus. Later, although a representative of a foreign power, he was arrested, accused by Augustus of double dealing, surrendered to Sweden, and executed Oct. 11, 1707.

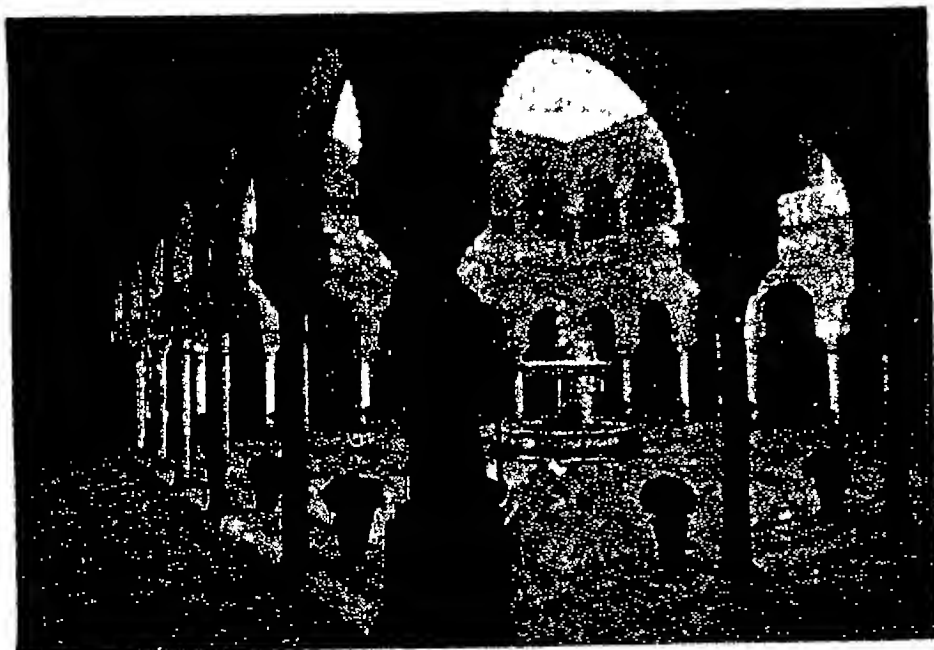
**Patmore, COVENTRY KERSEY DIGHTON** (1823-96). British poet. Born at Woodford, Essex, July 23, 1823, he published a volume of poems in 1844, and was an assistant in the printed book dept. of the British Museum, 1846-66.

He contributed to the leading reviews, and his works include *The Angel in the House*, 1854-62, his most notable poem; *The Unknown Eros*, 1877, a collection of odes; *Amelia*, 1878; *Rod, Root, and Flower*, 1895. A man of difficult temperament, egoist and mystic, he became a Roman Catholic in 1864, and died at Lymington, Nov. 26, 1896. His letters were ed. by B. Champneys, 1900; his life written by E. Gosse, 1905 and D. Patmore, rev. edn. 1949; his poetry evoked studies by O. Burdett, 1921, and F. Page, 1933.

**Patmos** (Ital. *Patina*). One of the Dodecanese or southern Sporades group. Lying S.W. of Samos, on the S.E. side of the Aegean, it is famous as the place of banishment of the Apostle John. It became an Italian possession provisionally in



Coventry Patmore,  
British poet  
After J. S. Sargent



Patio, in Spanish domestic architecture. The patio in the House of Pilate, Seville





Patmos. Above the houses is seen the monastery of S. John the Divine, built in 1088

1912 and definitely in 1924, but was transferred in 1947 to Greece. Patmos covers 22 sq. m. Pop. 3,184. See Dodecanese.

**Patna.** Former princely state of India, merged in Orissa in 1948. Administratively it was until 1947 in the Chhatisgarh agency. It has no connexion with Patna in Bihar. It lay between the river Tel on the S.E. and Raipur and Sambalpur on the W. and N., and covered 2,530 sq. m. Bolangir was the capital.

**Patna.** Division and district of Bihar state, India. The div. comprises the three dists. of Shahabad, Gaya, and Patna, and lies S. of the Ganges. It is crossed by the Son, and bounded W. by Uttar Union. Almost the whole of the cultivable area of the dist. is under cultivation. Area of div., 11,338 sq. m.; pop (1951) 8,287,211. Area of dist., 2,164 sq. m.; pop. 2,528,272.

**Patna.** City and capital of Bihar state, India. It is situated on the right bank of the Ganges close to the mouths of the three tributaries, Son, Gogra, Gandak. Before the days of rlys. the city was a great trading centre with water transport in five directions. The remains of a pillared hall, erected by the emperor Asoka in the 3rd century B.C., were unearthed in 1912-13. The oldest mosque is that of Sher Shah, 1540-45; the Patna Oriental library has a fine collection of Arabic and Persian manuscripts. Here are a university, 1917, and a high court. Pop. (1951) 283,479.

**Paton, JOHN LEWIS** (1863-1946). British educationist. Son of J. B. Paton, principal of the Congregational institute, Nottingham, he was born



J. L. Paton, British educationist

member of the consultative committee of the board of Education, and in 1925 was appointed president of the memorial college, S. John's, Newfoundland. He retired in 1933. His biography of his father appeared in 1914. Paton died April 28, 1946.



Patras, Greece. View of part of the town from the harbour

**Paton, SIR (JOSEPH) NOEL** (1821-1901), Scottish painter. Born at Dunfermline, Dec. 13, 1821, he studied at Edinburgh and London. Successful in the Westminster Hall competitions of 1845 and 1847, he became A.R.S.A. in 1847, and R.S.A. in 1856; and the queen's limner for Scotland in 1866. He painted religious and other subject pictures in the pre-Raphaelite manner, with strong but not always attractive colour. He was at his best in black and white work. Knighted, 1867, he died in Edinburgh, Dec. 26, 1901.

**Patos Island.** Island in the Gulf of Paria three miles off the Venezuelan coast. Patos, which had been a British possession since 1628, was ceded to Venezuela in 1941, after protracted negotiations. The island has an area of 170 acres, and had a caretaker, who was the sole inhabitant.

**Patras.** Seaport of Greece. The capital of the department of Achaea, it is in the Morea or Peloponnese. Situated on the slope of a hill overlooking the Gulf of Patras, 13 m. S.W. of Lepanto,

it contains several Jewish synagogues and Greek churches, one of them being traditionally associated with the martyrdom of S. Andrew. The exports include currants, wine, oil, woollen goods, silk, skins, valonia, lemons, honey, and pomegranates. Anciently known as Patrae, it is the only survivor of the 12 cities of Achaea. An early centre of Christianity, it was besieged by the Spaniards in 1532 and 1595. Rebuilt after its destruction by the Turks in 1821, it is now one of the principal Greek ports. During the Second Great War British and Greek regular forces landed here, Oct. 4-5, 1944, without opposition from the Germans, who were by then withdrawing from Greece. There are remains of a Roman aqueduct. Pop. (1951) 79,014.

The Gulf of Patras is an inlet of the Ionian Sea, between Hellas and the Morea. It has a length of 22 m. and a max. width of 14 m. At the Strait of Lepanto, leading to the Gulf of Corinth (*q.v.*), it narrows to barely 2 m.

**Patria potestas** (Lat., paternal power). In Roman law, the authority of the head of the household over his own children, or those adopted by him, irrespective of age. This authority, which normally reduced the children to a condition of life-long dependence, gave the father power over their life and liberty. But it was destroyed by the thrice-repeated sale of a son, the single sale of a daughter, the adoption of a son into another *gens* or clan, the passing of a daughter into the legal power (*manus*) of a husband, the loss of the rights of citizenship by father or son. The *patria potestas* was the basis of Roman moral and social strength until Greek influence prevailed.

**Patriarch** (Gr. *patria*, family; *archein*, to rule). Head of a family or tribe. It is specifically applied to those regarded by the Jews as the fathers of the Jewish people, to the presidents of the Sanhedrim, and, after being adopted by the early Church as the title of the holder of any great see, was given to the bishops of Alexandria, Rome, Antioch, Constantinople, and Jerusalem. One of the titles of the pope is Patriarch of the West; and though the patriarchates of

Constantinople, Jerusalem, Antioch, and Alexandria are sees of the Greek Church, the Holy See continues to appoint bishops to them. These officials, however, except the bishop of Jerusalem, reside in Rome. The title is derived from Acts 7, v. 8. *See* Archbishop; Exarch.

**Patriarchy.** Form of social organization under which personal rights, duties, and restrictions are determined from the paternal side. Some social anthropologists prefer the alternative term "father-right." Descent and inheritance may be reckoned along the father's line. The wife may reside with her husband's people, and child-control and choice of mate may be vested in the father. *See* Family; Matriarchy.

**Patricia.** District of Ontario, Canada. It is the most N. area in the prov., was formed from parts of Keewatin and the N.W. Territories in 1912, and named in honour of Lady Patricia Ramsay, daughter of the duke of Connaught, then governor-general. The area of the district is 157,400 sq. m. *See* Canada; Ontario.

**Patrician.** Member of the ruling order in ancient Rome, as opposed to the plebs or plebeians. They were the descendants of the original citizens, whereas the plebeians were the descendants of those who joined the community later. They had the monopoly of the priestly offices, had the exclusive right of interpreting the law and giving decisions, and alone were eligible for the republican magistrates, while the senate was recruited almost exclusively from their ranks.

A long and bitter struggle was waged by the plebeians to break down all these privileges. This was eventually successful, and from about 300 the patricians survived only as an aristocracy of birth. In the later period of the Roman Empire the dignity was revived as a personal distinction conferred upon eminent personages. In the free cities of the Holy Roman Empire the term was applied to members of families entitled to representation on the council, and was still so used in the 19th century in the Hanseatic towns and some Swiss cantons. *See* Plebeian; Rome.

**Patrick** (c. 387–c. 493). Patron saint of Ireland. He was born probably near Dumbarton, Scotland, at Kilpatrick, his father being a Roman named Calphurnius, his mother Conchessa being of British origin. Irish raiders carried him into servitude in Antrim at the age

of 16, but, escaping, he became a monk at Tours, was ordained priest by S. Germain of Auxerre, was entrusted by Pope Celestine I with the conversion of Ireland, and went to Wicklow in 433. In spite of hostility, he made his way to Meath, and there met Laoghaire, king of Ireland, at Tara, where he baptized large numbers.

He worked for seven years in Connacht and preached in the other provinces, founding numerous churches, religious houses, and bishoprics. A famous incident recorded of his early labours was the plucking of a shamrock to illustrate the doctrine of the Trinity. Croagh Patrick, at Clew Bay, and the island in Lough Derg, Donegal, were among his places of retreat for meditation and devotion. S. Patrick died at Saul, near Downpatrick, according to some authorities on March 17, 493, though the year is given by the Bollandists as 460. His day is March 17. His literary remains are the valuable Confession, preserved at Dublin, and the letter to Coroticus. There are Lives by J. H. Todd, 1864; J. B. Bury, 1905; W. M. Letts, 1932.

**Patrington.** Town of the E. Riding of Yorkshire, England. It is 14 m. by rly. S.E. of Hull, and has a trade in seed, corn, and coal. The notable Decorated church has a central spire. Pop. 1,100.

**Patriotic Fund.** General term for funds raised by public subscription for the relief of sailors and soldiers wounded in war, and their dependants. In the 19th century several such funds were started, the first being that connected with Lloyd's, 1803–26, when over £600,000 was raised. The Crimean War fund touched nearly £1,500,000. Charges of maladministration being made, an Act of 1903 established the Royal Patriotic Fund Corporation, to which the assets were transferred. Funds are administered to benefit dependants of deceased officers, non-commissioned officers, sailors, soldiers, marines, and airmen. There is a Royal Victoria Patriotic school at Wandsworth, for orphaned daughters of servicemen. The office is at 28, Sackville Street, London, W.1. *See* War Charity.

**Patripassians** (Lat. *pater passus*, suffering Father). Followers of an early form of the heresy known as Sabellianism (*q.v.*). It arose in the 2nd century, and its main contention was that God the Father became man, and died on the Cross, and that Christ, so far as He was flesh, was Son, and, so far

as He was spirit or God, was the Father. Patripassianism was a development of Monarchianism (*q.v.*).

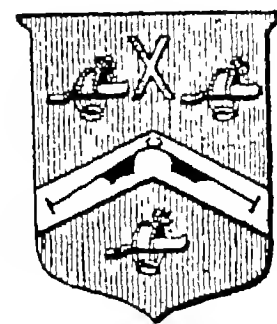
**Patron** (Lat. *patronus*, from *pater*, father). Originally, a Roman citizen who had freed or manumitted a slave, the term expressing the new relation between master and freedman. The patron by the act of manumission did not lose all rights over his former slave, who owed him the obedience of a son. In addition, patron and freedman were under mutual obligations of a stringent character. From this arose the practice among the impecunious of seeking the favour of an influential man whose clients or dependants they became, and who accepted the title of patron.

Belief in the protection of the saints brought the practice of adopting particular saints as patrons of churches, guilds, etc., as well as of individuals.

**Patronage.** Literally, that which a patron can give, a favour of some kind. Patronage is of two chief kinds. The right to bestow benefices in the Church of England is known as patronage, whether it is exercised by bishops or laymen. Political patronage, *i.e.* the right to appoint persons to offices of state, is much less extensive than it was formerly, but it appertains to most rulers and ministers of state. In the U.K. the existing office of patronage secretary to the Treasury is a reminder of its past importance. *See* Benefice; Ecclesiastical Law.

**Patten** (Fr. *patin*, clog). Wooden shoe or clog with an iron ring or thick sole to raise the foot out of the mud. Pattens were worn in the 15th century for cleanly walking in the badly kept streets, and survived as chopines through two centuries. *See* Boots, col. plate.

**Pattenmakers' Company,** THE. London city livery company. Its origin was a fellowship of clog-



Pattenmakers' Company arms

makers which flourished in the 15th century. The church of S. Margaret Patten, Eastcheap, is said to mark the old centre of the industry. The Pattenmakers were

first incorporated by charter, Aug. 2, 1670. Their office is at 66 Gloucester Place, W.1.

**Patteson,** JOHN COLERIDGE (1827–71). British missionary. Born in London, April 1, 1827, son of a judge, and educated at Eton and Balliol, Oxford, he was ordained





John C. Patteson,  
British missionary

in 1853, and in 1855 he went out as a missionary to the South Seas. In 1861 he was made bishop of Melanesia, and, after ten years of devoted service, he was murdered, Sept. 20, 1871, on Nukupu, having been mistaken for a slave-dealer. *Consult* Lives, C. M. Yonge, 1898; F. H. L. Paton, 1930.

**Patti, ADELINA JUAÑA MARIA** (1843-1919). Famous soprano singer. Born at Madrid, Feb. 19, 1843, she made her operatic début as Lucia in 1859 in New York, where her parents, Italian musicians, had gone to reside. In 1861 she sang with great success in London as Amina in *La Sonnambula*, and afterwards visited the chief cities of Europe. Madame Patti was for long the most popular soprano in England, probably in the world, and is held by many to have been the greatest who ever performed. Her series of farewell concerts in London lasted from 1895 to 1908. She was thrice married, her third husband being a Swede, Baron Cederström, who owned Craig-y-Nos Castle, Brecon. She died Sept. 27, 1919. Buried first in England, her body was exhumed and interred in Père Lachaise, Paris. Craig-y-Nos Castle is now a sanatorium, for which it was bought in 1924.



Adelina Patti,  
soprano singer

**Pattison, DOROTHY WYNDLOW** (1832-78). British philanthropist, known as Sister Dora. Born at Hauxwell, Yorks, Jan. 16, 1832, she was a daughter of the rector and the youngest sister of Mark Pattison (*v.i.*). In 1864 she joined the sisterhood of the Good Samaritan at Coatham, and in 1865 took charge of a hospital conducted by that community at Walsall. In 1877, during an epidemic of smallpox, she became superintendent of the Walsall municipal hospital. She died Dec. 24, 1878. A statue was erected in Walsall to her memory. *Consult* Sister Dora, M. Lonsdale, 1880.

**Pattison, MARK** (1813-84). British scholar. Born Oct. 10, 1813, at Hornby, Yorks, he was

educated at Oriel College, Oxford. He associated during his early years with Newman, but later became more liberal in his views. In 1839 he was elected a fellow of Lincoln College, being ordained in 1841. In 1855 he resigned his tutorship, but returned to Oxford in 1861



Mark Pattison,  
British scholar

as rector of Lincoln, remaining there until his death at Harrogate, July 30, 1884. His widow, Emilia Francis Strong, married Sir C. W. Dilke (*q.v.*).

Pattison wrote lives of Casaubon and Milton, and contributed to *Essays and Reviews* (*q.v.*). His *Memoirs*, published posthumously in 1885, are almost painful in their frankness; he is sometimes bitter towards others, and always hard on himself. *Consult* *Recollections of Pattison*, L. A. Tollemache, 1891.

**Patton, GEORGE SMITH** (1885-1945). American soldier. He was born at San Gabriel, Calif., Nov. 11, 1885, and graduated from West Point in 1909. He was aide-de-camp to Gen. Pershing, 1916-17, later commanding a tank brigade. Commanding general, the 1st armoured corps in 1941, he was at

because of his outspoken political opinions. He died at Heidelberg on Dec. 21, after a motoring accident. He wrote *War as I Knew It*, pub. posth. 1948. *Consult* *The Man in a Helmet*, J. Wellard, 1947.

**Pau.** Town of France. The capital of the dept. of Basses-Pyrénées, it stands on the right bank of the Gave du Pau, 66 m. E.S.E. of Bayonne. The chief building is the castle, built in the 14th century by Gaston Phoebus, count of Foix; later it was enlarged, and it was restored by Louis Philippe, although part is still a ruin. It has a noted collection of tapestries. Other buildings include the hôtel de ville, an old Jesuit college, and a museum. In the Place Royale is a statue of Henry IV. Standing at a height of 670 ft., with a delightful climate, Pau is a favourite winter resort. The residence of the counts of Foix, during 1512-89 it was the capital of the little state of Béarn. Henry IV and Marshal Bernadotte were born here. Pop. (1954) 48,320.

**Paul.** Former urb. dist. of Cornwall, England, divided in 1934 between the bor. of Penzance and the rural dist. of W. Penwith. The Spaniards burned Paul village in 1593. Near by are remains of a British camp.

**Paul.** Masculine Christian name. Of Roman origin, it is a



Pau, France. View from the left bank of the Gave, showing the 14th century castle

the head of the western task force when the Allies landed in N. Africa. Lieut.-gen. in 1943, he led the 7th army through the Sicilian campaign. In W. Europe, Patton commanded the U.S. 3rd army, formed Aug. 1, 1944, which cut off the Cotentin pen. and liberated Paris in what was virtually a continuous drive from Normandy to the Siegfried Line, where he was halted by difficulties of supply. He helped to restore the situation in the Ardennes after the German break-through. In 1945 Patton was appointed military governor of Bavaria, but was transferred to the command of the 15th army

contraction of Paucillus, and means small. It became popular throughout Christendom because borne by S. Paul. The form Paulus is sometimes used; Paula, Pauline, Paulina and Paulette are feminine.

**Paul.** Christian apostle and saint. He was born at Tarsus, Cilicia, about the same time as Jesus Christ was born in Judea. He was originally called Saul, the change being mentioned without explanation in the account of his first missionary journey. He was a Jew of the Diaspora, who had learnt the trade of a tent-maker in Tarsus, a city which specialised in the manufacture of

haircloth. Sent to Jerusalem to train as a rabbi, he studied "at the feet of Gamaliel," but did not absorb that great scholar's tolerant spirit. After the Resurrection he became one of the leading opponents of the followers of Christ, and headed a persecution intended to suppress them, being present at the martyrdom of Stephen. But on his way to Damascus, to further the persecutions, he was converted by a vision of Christ to the faith he was attempting to destroy.

After three years of meditation in Arabia, he went to Jerusalem. The confidence of the disciples was won for him by Barnabas, and he began to preach with great power. The opposition of the Jews was too strong, and he had to move to Tarsus, where he spent some years (of which there is little record) in evangelising his native province. Then Barnabas, whose work at Antioch was proving successful, summoned his help there. Thence he set forth on his first missionary journey, made in a circle round Cilicia. This was attended with great difficulties and astonishing success; but his second mission was by far the most adventurous and influential, carrying the Gospel into Europe, and evangelising the cities of Greece, including Athens and Corinth. For the third journey, covering the same ground, the chief centre was Ephesus.

His aspiration now was to preach the Gospel in Rome, and this hope was fulfilled, though in an unexpected way. Arriving in Jerusalem after his third journey, he was arrested at the instance of the Jews. As a Roman citizen by birth he appealed to Caesar, and therefore had to be sent to Rome for trial before the emperor. On his way he suffered long imprisonment at Caesarea, and at Rome he waited two years for trial. But from prison he kept up ceaseless communication with the churches he had founded all over the Empire. He sent them letters, now known as the Epistles, and received letters from them; their leaders visited him, and his helpers visited them.

It has been questioned whether he was ever freed, but the probability is strong that he was. The two Epistles to Timothy and that to Titus appear to belong to the period after his first Roman imprisonment, and contain mentions of visits to such places as Ephesus and Crete. In the second Epistle to Timothy, written from prison in Rome, he is expecting,

not release, but the speedy ending of his course. At Three Fountains, a spot to the S. of Rome, is shown the traditional scene of his beheading.

At the outset of Paul's Christian career, he strongly maintained against the opinion of the Jewish church, as well as of Peter, James, Barnabas, and other associates, the right of Gentiles to full communion in the Church without submission to the Jewish law, and thereby laid the foundation of Christianity as a world religion rather than a Jewish sect. For this, and for his great missionary zeal, he has been called the second founder of Christianity. He occupies a lofty place among both thinkers and men of action. Through faith and love he felt himself one with Christ; and in his own personality it seemed to him that Christ continued to act and suffer. Justification by faith, union with Christ, and the universality of the Gospel became the watchwords of his life and he never wavered from his proclamation of them in phrases that have become part of the everyday consciousness of the Christian world. See Acts of the Apostles; Christianity; Church; and under the various Epistles, e.g. Galatians.

*Bibliography.* Life and work of S. Paul, F. W. Farrar, rev. ed. 1902; The Religions of S. Paul, P. Gardner, 1911; Studies of S. Paul and His Gospel, A. E. Garvie, 1911; The Meaning of S. Paul for Today, C. H. Dodd, 1920; The Religion of Jesus and the Faith of S. Paul, A. Deissman, 1923; Paul of Tarsus, T. R. Glover, 1925; Christianity according to S. Paul, C. A. Scott, 1927; The Gospel of S. Paul, S. Cave, 1928; Beyond Damascus, F. A. Spencer, 1935; S. Paul, the Traveller and Roman Citizen, W. M. Ramsay, 1942.

**Paul.** Name of five popes. Paul I succeeded his brother Stephen II in May, 757. He associated himself with the Frankish king Pepin, and entered into friendly relations with the emperor of the East. He died June 28, 767.

**Paul II** (1417-71). Pope from 1464 to 1471. A Venetian and the nephew of Eugenius IV, Pietro



Paul II,  
Pope 1464-71

Barbo abandoned a secular career on the elevation of his uncle to the papal throne (1431). He was created cardinal in 1440, and was elected pope in suc-

cession to Pius II. As Paul II he instituted the carnival at Rome, built the palace now known as the Palazzo di Venezia, and was a patron of the arts. He died July 26, 1471.

**Paul III** (1468-1549). Pope from 1534 to 1549. Born Feb. 29, 1468, of an ancient Roman family,



Paul III,  
Pope 1534-1549

Alessandro Farnese studied first at Rome and afterwards at Florence, where his association with the court of the Medici laid the foundations of his

career. He was made cardinal in 1493 by Alexander VI, and increased in favour under successive popes. On his election to the papacy he was bishop of Ostia. His pontificate coincided with the Counter-Reformation.

He afforded material assistance to the emperor in his struggle against the Protestant princes of the Schmalkalden League, but Charles V's methods of compromise created a breach between them which was never healed. The general council met at Trent in December, 1545, but an outbreak of the plague led to its adjournment to Bologna, and subsequently, as a result of the emperor's demand for its return to German territory, the pope indefinitely suspended its meetings. He died Nov. 10, 1549.

**Paul IV** (1476-1559). Pope from 1555 to 1559. Born near Benevento, June 28, 1476, a member of the Caraffa family,

Giovanni Pietro was ordained, and in 1524 resigned his benefices to enter a religious order founded by S. Cajetan. Picked out by Paul III for



Paul IV,  
Pope 1555-59

the work of reform, Caraffa was in 1536 made cardinal, and afterwards archbishop of Naples. He was elected pope in his 80th year. The chief feature of Paul IV's pontificate was an implacable opposition to Spain, which prompted his war with Philip II, his alliance with France, and the enrichment of his worthless nephews with possessions taken from the Colonna family, who supported the Spanish interest. He reorganized the Inquisition, before which he caused to be



summoned even eminent clerics, on the bare suspicion of heresy. Paul IV died Aug. 18, 1559.

**Paul V** (1552-1621). Pope from 1605 to 1621. Born at Rome, Sept. 17, 1552, Camillo, a member of the



Paul V,  
Pope 1605-21

noble Borg-hese family, studied law at Perugia and Padua. He was created cardinal by Clement VIII in 1596, and elected pope in succession to Leo XI.

The chief event of his reign was his quarrel with Venice. In England the pope forbade Catholic subjects to take the oath of allegiance demanded by James I. He died Jan. 28, 1621. See Life, T. A. Trollope, 1861; History of the Papacy, M. Creighton, 1903; History of the Popes, L. v. Pastor, Eng. trans. F. I. Antrobus, 1891-1912.

**Paul I** (1754-1801). Tsar of Russia. He was born Oct. 1, 1754, the son of Catherine the Great and Peter III, who had such an aversion for him that he refused to acknowledge him. After the murder of Peter in 1762 Catherine seized the throne, and Paul led an obscure existence until her death. Paul began his reign by banishing the counsellors of Catherine. He joined the allied powers against Napoleon, and later entered into an alliance with Napoleon in order to crush the Bourbons. On March 23, 1801, he was assassinated.



Paul I,  
Tsar of Russia

**Paul I** (b. 1901). King of the Hellenes. The younger brother of George II, he was born at Athens, Dec. 14, 1901, and joined the



Paul I,  
King of the Hellenes

Greek navy. He lived much in England. He was a qualified air pilot, and trained as a parachutist. In 1938 he married Princess Frederica of Brunswick, a descendant of Queen Victoria. They have a son, Constantine, and two daughters. He succeeded to the throne on the death of his brother, April 1, 1947.

**Paul.** Prince of Yugoslavia. The son of Prince Arsène and grandson of Alexander Kara-Georgevitch, prince of Serbia 1842-1859, Prince Paul was born in St. Petersburg (Leningrad), April 28, 1893. He studied at Oxford and lived for some time



Paul,  
Prince of Yugoslavia

in England. When Alexander I of Yugoslavia was assassinated, Oct., 1934, Paul became head of a council of regency, King Peter (*q.v.*) being a minor. The dictatorship imposed by Alexander I was still in force, and, while he maintained it, he showed himself in sympathy with liberal elements and with the demands of the Croats. In March, 1941, popular indignation against his signing of an agreement with the Tripartite powers led to a *coup d'état*. On March 27, 1941, Peter assumed power, Paul resigned the regency, and fled with his family to Athens. On Jan. 2, 1942, when he was in Kenya, the Yugoslav government in London annulled his membership of the royal family. But he was included among those members of the royal household who under a decree issued Mar. 9, 1947, were deprived of Yugoslav citizenship.

**Paul of Samosata.** Third century heretic. Born at Samosata, on the Euphrates, he was appointed bishop of Antioch about 260. He was condemned for heresy by the council of Antioch in 264, and was deposed from his bishopric five years later. But the influence of Zenobia of Palmyra maintained him in his position till 272. He taught that the Word was not made flesh, but merely manifested Itself in Christ without making Him divine. In his view, the Trinity was merely a triple form of manifestation of God.

**Paul-Boncour,** JOSEPH (b. 1873). French statesman. Born Aug. 4, 1873, at St. Aignan-sur-Cher, he became a barrister, and was a member of the Waldeck-Rousseau cabinet of 1899 and the Viviani cabinet of 1906-09. He sat first as an independent Republican Socialist deputy, but joined the Socialists in 1911, in which year he was minister of Labour under Monis. After 1919 he became a prominent leader of the Socialist, and after 1931 of the Radical-Socialist party. In 1932

he became minister of war under Herriot. When Herriot refused to sanction repudiation of the French debt to the U.S.A., he succeeded him as premier, Dec., 1932, but resigned the next month. He held the foreign affairs portfolio in the Daladier, Sarraut, and Chautemps governments, 1933-34, attending the world economic conference, June, 1933, and signing the Franco-Russian trade agreement, Jan., 1934. He had been a delegate to the League of Nations from 1924 to 1926, and in 1932 was appointed permanent French delegate there, returning to France on his appointment as minister of state for League affairs, Jan., 1936. He resigned this post six months later. For a time he was out of politics, but returned after the Second Great War, representing France at the United Nations Assembly.

**Paul et Virginie.** Story by Bernardin de Saint-Pierre. It was first published in 1789 as one of his Studies of Nature. The scene is laid in the island of Mauritius, and the story is of the great affection of the hero and heroine—somewhat conventionalised “children of nature.” The tragic tale is one of the classics of sentimentalism.

**Paulet or Poulett.** Famous English family, the heads of which are the marquess of Winchester and Earl Poulett. Its earliest members came apparently from the village of Pawlett, near Bridgwater, and one of them, Sir Amyas Poulett, was knighted in 1487. A later Sir Amyas was gaoler of Mary Queen of Scots, and others were noted soldiers.

In 1551 Sir William Paulet was made marquess of Winchester, and in 1689 the 5th marquess was created duke of Bolton. The latter title became extinct when the 6th duke died in 1794, but the marquessate passed to another branch of the Paulets. In 1627 John Poulett, a descendant of Sir Amyas, was made Lord Poulett of Hinton. John, the 4th lord, was made Earl Poulett in 1706, and in 1710-11 was first lord of the treasury and nominal head of a Tory ministry.

**Pauli,** WOLFGANG (b. 1900). Austrian physicist. Born in Vienna, April 25, 1900, he was educated at the university, and in 1921 was appointed assistant physicist at Göttingen. In 1922 he went to Copenhagen university as a pupil of Bohr (*q.v.*). Having taught physics in turn at the universities of Hamburg and Zürich, he went in 1935 to the U.S.A., becoming visiting professor of theo-

preached Manichaean doctrines in Armenia. While they repudiated the alleged apostleship of Mani, they adopted his doctrines of the essential evil of matter and the dualistic origin of the universe. They denied the inspiration of the O.T., and rejected the doctrine of the Atonement. They also repudiated the sacraments.

The Paulicians were constantly persecuted from the 7th till the middle of the 9th century, when they leagued themselves with the Saracens and revolted against the emperor. Finally they were defeated, but continued to give trouble; and early in the 10th century they became powerful in Bulgaria, where their teaching had spread widely. At the close of the 11th century they were scattered by Alexis Comnenus.

**Paulinus.** English prelate. Born in Rome, he became a monk, and in 601 was one of those sent to England by Pope Gregory I to assist S. Augustine. After working in Kent he went in 625 to Northumbria, where in 627 he baptized the king, Edwin, and became the first bishop of York. After the death of Edwin in 633, he returned to Kent and became bishop of Rochester.

**Paulinus, GAIUS SUTONIUS.** Roman general. In A.D. 41 he suppressed a revolt in Mauritania, thus extending the Roman power to the base of the Atlas Mountains. In 59 he was appointed governor of Britain, and two years later subdued Anglesey, the stronghold of Druidism. Summoned south to quell the Iceni, who had rebelled under the leadership of their queen, Boadicea (*q.v.*), Paulinus gained a decisive victory over them near London. The following year he was recalled to Rome, and in 66 was consul. After the death of Galba, he served under Otho, and in 69 was defeated by Vitellius.

**Paulistas.** Descendants of the first Portuguese settlers in Brazil. Settled mostly round São Paulo,

ianaceae. It is a native of Japan. It has large opposite, downy leaves and tubular, violet flowers with darker spots, in elongated clusters at the ends of the shoots.

**Paul Pry.** Character of a three-act comedy of the same name by John Poole, produced at the Haymarket Theatre, London, Sept. 13, 1825. An inquisitive gossip, he tries to learn all about other people's business by eavesdropping or appearing with the half apologetic "I hope I don't intrude," which came to be a catch phrase. The creator of the part was Liston, and later it was often played by Toole. Paul Pry is also the title of a two-act comedy by Douglas Jerrold, produced at the Coburg Theatre, Nov. 27, 1826.



Paul Pry, as acted by John Liston  
After G. Clint. A.R.A.

**Paulus, FRIEDRICH VON** (1890-1957). German soldier. Born at Breitenau, Hesse, he served in the First Great War with an infantry commission and on the staff. After 1933 he was engaged in the development of German armoured forces. He was chief of staff to Reichenau in the campaign against Poland, 1939, and subsequently with the rank of lieut.-gen. supervised the training of armies for Russia. Promoted to col.-gen. in 1942, he distinguished himself at Kharkov and commanded the 6th army at Stalingrad, but his forces were surrounded in the Russian counter-offensive of Nov., and he was taken prisoner Jan. 31, 1943,



Paulownia. Leaves and cluster of tubular flowers

behalf of the council of free Germans in Russia, Aug. 8, 1944, and on Nov. 14 broadcast an appeal to the Germans to end the war. He remained in Russia until 1953, and died at Dresden, Feb. 1, 1957.

**Paulus, LUCIUS (OR MARCUS) AEMILIUS.** Roman general. Consul in 219 B.C., he was awarded the honour of a triumph for his victory over Demetrius of Pharos, an Illyrian general who had carried on piratical expeditions in forbidden waters, contrary to treaty conditions. Again consul in 216, he lost his life at the battle of Cannae, fought on Aug. 2 against his advice, refusing to leave the field after the defeat of the Romans.

**Paulus, LUCIUS AEMILIUS** (c. 229-160 B.C.). Roman general. The son of the above Lucius Paulus, he received the surname of Macedonicus from his defeat of Perseus, the last king of Macedonia, at Pydna in 168 B.C. He was one of the best types of the old republican nobility. His son was adopted into the family of Scipio and became known as Scipio Africanus Minor.

**Paulus Diaconus** OR PAUL THE DEACON. Medieval historian. By birth a Lombard, he was born about 725, and became a member of the court of the Lombard king. Later he entered a monastery, and became a deacon, dying before 800 at Monte Cassino, a Benedictine abbey where he had lived for some time. He was known to Charlemagne, and was one of those who helped in the 8th century revival of learning. The reputation of Paulus rests on his History of the Lombards. A Latin chronicle, it tells the story of the Lombards down to 747, and about the relations between the Franks and the Lombards is the most valuable authority extant. Other writers con-



tinued it. It was first printed in 1514, and has been translated into English and other languages.

**Pauperism** (Lat. *pauper*, a poor person). State of dependence upon the community through lack of the ordinary means of subsistence. As long ago as in the time of ancient Greece the maintenance of the poor was a matter of state concern. The sale of grain to the poor at low prices, and ultimately its free distribution, marked the decadence of the Roman empire and contributed to its downfall. Feudalism involved the dependence of the serf upon his lord for maintenance, and the Church became throughout the Middle Ages the greatest almsgiver. When the monasteries fell, the poor suffered, but in England vagabondage had been a crying evil long before this. Repressive measures had been tried in vain. Compulsory contributions for the support of the poor began in England in 1535, the duty of relief being put on the parish. A law of 1601, by taxing every parishioner for the relief of the poor in his parish, formed the basis of the English poor law system. See Poor Laws.

**Pausanias.** Spartan general. After the death of his father Cleombrotus (480 B.C.), he acted as regent for Pleistarchus, the son of Leonidas, and hence is sometimes erroneously called king of Sparta. In 479 he was appointed to the command of the combined Greek force which defeated the Persians at Plataea (q.v.). He then captured Byzantium, whence the Persians threatened the Aegean Sea, but, impressed with the magnificence of the Persian empire, made overtures to Xerxes, offering to assist in the subjugation of Greece, and asking the hand of his daughter. Xerxes received these overtures favourably, and Pausanias began to treat the representatives of the allied states with such arrogance that they transferred their allegiance from Sparta to Athens.

Meanwhile suspicion had been aroused, Pausanias was recalled to Sparta, and twice stood his trial for treason. He was acquitted on each occasion, but an intercepted letter to the Persian monarch placed his guilt beyond doubt. After an unsuccessful attempt to provoke a Helot revolt, Pausanias took refuge in a temple, which was walled up with a view to starving him to death. At the last moment, in order that the sacred place might not be polluted by death, he was brought out, and expired, c. 471.

**Pausanias** (c. A.D. 150). Greek traveller and geographer. Perhaps a native of Lydia, he travelled extensively in Greece, embodying the results of his journeys in a work in 10 volumes, *The Itinerary of Greece*. Modern research largely confirms the accuracy of the Itinerary. Pausanias travelled also in Egypt, Syria, Palestine, and Italy.

**Pause.** In music, a sign placed over a note or rest to indicate that it is to be sustained *ad libitum* beyond its written value. It is also used for a rest.

**Pavane** (Ital. *pavano*, from Lat. *pavo*, peacock). Stately dance tune in duple time, joining with the galliard in the earliest kind of suite. Thomas Morley, in *A Plaine and Easie Introduction to Practicall Musicke*, 1597, wrote of the Pavane as "a kind of staide musicke, ordained for grave dauncing . . . everie straine is plaid or sung twice. A straine they make to contain 8, 12, or 16 semibreves as they list, yet fewer than eight I have not seene in any pavan. . . . After everie pavan we usually set a galliard." Modern examples have been composed by Fauré and Ravel.

**Pavia.** Prov. of N. Italy, in Lombardy. It is bounded N. by Milan, N.W. by Novara, S.W. by Alessandria, and S.E. by Piacenza. Mountainous in the S., it stretches N.W. from the Ligurian Apennines to the valley of the river Po. Fertile tracts in the N. and centre are watered by the Ticino, Sesia, and other tributaries of the Po. There are many canals, the chief linking up the Ticino with the Olona. Area, 1,287 sq. m. Pop. (1951) 505,159.

**Pavia.** City of Italy. The capital of the prov. of Pavia, it is the ancient Ticinum. It stands on the left bank of the Ticino, near its junction with the Po, 22 m. by rly. S. of Milan. A magnificent 14th century covered bridge spanned the river, but was severely damaged in an air raid, Sept. 5, 1944. The cathedral was founded in 1487 and the façade finished in 1898. S. Michele, one of the finest specimens of the Lombard basilica, dates from the 11th century. In it some of the

medieval emperors were crowned kings of the Lombards. The original church, which was in existence as early as 661, was burned down in 1004; its successor was restored in 1863-76.

The university is a handsome building dating from 1490, but Pavia was a centre of learning by the 9th century. Attached to the modern edifice is a well-stocked library and a botanic garden. The Palazzo Malaspina houses a collection of paintings, engravings, and historical relics. The Castello, built by Galeazzo Visconti about 1360, is a huge rectangle with arcades, which formerly contained a priceless collection of armour and antiquarian relics; it was looted by the French in 1500, and was long used as a barracks. Near by is the Certosa di Pavia. Manufactures are unimportant, but there is trade in silk, wine, olives and olive oil, corn, hemp, and Parmesan cheese. Pop. (1951) 65,565.

Founded by Gauls, Pavia was the capital of the kingdom of the Lombards until 774, when it was captured by Charlemagne. It fell into the hands of the Visconti in the 14th century, and thereafter shared in the fortunes of Milan. It was sacked three times by the French, and occupied by Austria in 1706, 1746, and 1814, and retained by them until 1859, when it became Italian. See Certosa.

**Pavia, BATTLE OF.** Victory of Charles V over the French, Feb. 24, 1525. After a protracted siege of the city of Pavia by Francis I of France, an imperial army was collected for its relief and the battle opened without the city walls. The day was going in favour of the French when their Swiss mercenaries deserted in a body. Troops emerged from the city and took the French in the rear, and after a bloody contest the latter were routed with a loss



Pavia, Italy. Part of nave and pulpit of the cathedral

of 10,000 men, Francis himself being taken prisoner. The battle ended the French invasion of Italy.

**Pavilion.** Word derived indirectly from Lat. *papilio* (butterfly) and used at first for a tent of a rather elaborate kind. It was given to the temporary erections at tournaments and festivities, e.g. at the Field of the Cloth of Gold, 1520. Today it is chiefly used for a building attached to a sports or recreation ground.

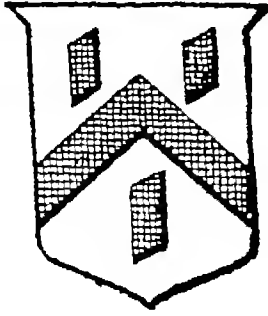
**Paving.** Surface covering of path, yard, terrace, court, or street. Solid interior floorings are also sometimes termed pavings. Early pavings were of cobble stones and paving stones (flags) laid on earth. Stone flags are now laid on sand, fine ashes, or concrete. They are usually bedded in mortar. Pre-cast concrete slabs are now often used, or bricks laid on edge are bedded and jointed in cement mortar on a concrete foundation. Concrete, sometimes reinforced, poured on a prepared ground surface is widely used for paving paths, yards, and roads. Temporary wood or steel edge forms are fixed with pegs and a screeding board is moved over these edges to finish the concrete surface. Expansion joints are spaced at intervals of from 15 to 30 ft. To give a hard wearing surface the top inch or two of concrete may incorporate small granite chippings in a mix called granolithic.

Quarry tiles or burnt clay laid on concrete are sometimes used for paving terraces and verandas. Concrete tiles incorporating aggregates of coloured stone and marble are likewise used. Tarmacadam, a mixture of tar or bitumen and stone chippings, is also frequently used for paths, pavements, and roads, or asphalt (coloured for ornamental purposes) may be utilised, laid either on concrete or well rolled ballast.

While similar materials may be used for interior pavings, the principal materials are granolithic; quarry tiles; black, white, and coloured clay tiles; terrazzo and marble mosaic; marble slabs; jointless composition. These are all laid on a concrete foundation.

Granite setts and wood blocks, once widely used for street paving, are not now favoured, because they are responsible for excessive traffic noise and for wheel skids when the surface is wet.

**Paviors' OR PAVIOURS' COMPANY, THE.** London city livery company. Referred to in Strype's Stow, ed. 1755, as "no doubt a



Pavioirs' Company arms

130, Mount St., W.1. See An Account of the . . . Pavioirs, C. Welch, 1909.

**Paviotso.** See Paiute.

**Pavlograd.** Town of Ukraine S.S.R., in a forested part of Dniepropetrovsk region. It is 40 m. E.N.E. of Dniepropetrovsk, on the river Volcha, and has pulp mills and furniture factories. Captured by German forces in Oct., 1941, Pavlograd was retaken by Russian troops on Feb. 20, 1943. A German counter-attack forced the Russians to leave again on March 9; but the Germans were finally driven out on Sept. 19. Pop. (est.) 50,000.

**Pavlov, IVAN PETROVITCH** (1849–1936). Russian physiologist. Son of a village priest in Ryazan, he was born Sept. 27, 1849, and educated at a theological seminary and St. Petersburg (Leningrad) university. He qualified as a doctor in Germany. Appointed director of physiological studies at the medical institute of St. Petersburg in 1890, he was professor 1897, and in 1907 was one of four scientific members of the academy. A series of papers on digestion, written over many years, won him a Nobel prize in 1904. After the Revolution he became director of the academy of medicine. His work on the nervous system increased his fame and he was acclaimed, particularly by the Behaviourist school of psychology in the U.S.A., among the most brilliant of modern scientists.



Ivan Pavlov, Russian physiologist

Pavlov is most widely known for his experiments on the reflexes of animals, which proved that reflex action could be conditioned by stimuli other than that which normally called it forth. Dogs, subjected for a period to the stimulus of a ringing bell every time they were fed, eventually salivated when the bell was rung alone. In 1934 the Soviet government gave Pavlov 1,000,000 roubles for the

company of anti-*quity*," but without any record of incorporation, and by Maitland in 1739 as a company by prescription, this guild was reconstructed in 1889.

The office is at

extension of his laboratories, and an annual pension of 20,000 roubles. He died Feb. 27, 1936.

**Pavlova, ANNA** (1885–1931). Russian dancer. Born at St. Petersburg (Leningrad), Jan. 31, 1885, she trained at the imperial ballet school there, and became prima ballerina at the Marinsky Theatre. She made her London début at the Palace Theatre in 1910, dancing with Mordkin in *Les Papillons* and *Valse Caprice*. She appeared with Diaghilev's company in Paris, but love of tradition and classicism resulted in her dissociating herself from contemporary ballet, and forming her own company. In such dances as *Le Cygne*,



Anna Pavlova, Russian dancer

probably her most famous piece, her genius was realized to the full. Pavlova was a supreme exponent of the classic manner; her magnificent virtuosity was matched only by grace and exquisite sense of style. She carried out world tours and frequently went to the U.S.A., though she made her permanent home at Hampstead. She died Jan. 22, 1931. Consult *Anna Pavlova*, by her husband, V. Dandré, 1932; also *Pavlova, the Genius of the Dance*, W. Hyden, 1931.

**Pavlovo.** Tn. of the R.S.F.S.R. in Gorky region, 45 m. by rly. S.W. of Gorky, on the river Oka. Long one of the most important industrial centres of Russia, it has been called the Russian Sheffield. There are factories of locks, knives, and ironware, also soapworks.

**Pavo OR PEACOCK.** Ancient southern constellation named by Bayer. It possesses several double stars, notably Zeta Pavonis.

**Pawl.** Device used in engineering to control movement. It consists of a wedge-shaped catch pivoted at its centre and moving either freely or spring-controlled. The pointed end of the pawl engages with the ratchets of a cogged wheel or rack, and can give limited motion to the wheel or rack or prevent reverse motion. It is fitted on winches, capstans, and other winding machines. The tension of the mainspring of a watch or clock is held during winding by a pawl.

**Pawn.** Chessman, one that is not a "piece." Each player begins with eight pawns, which he places one in front of each of his pieces. The pawn moves only one square



forward at a time, except that its first move may be two squares. It captures an opposing man one square forward diagonally. A pawn reaching the far side of the board becomes any piece its owner chooses. See Chess illus., p. 1996.

**Pawnbroker.** Person licensed to lend money at interest on the security of articles deposited with him. The origin of pawnbroking may be traced to early times, both in Europe and in Asia. In Christendom, however, the practice was philanthropic in character, rather than commercial, since the *mont de piété* was originally an Italian institution, supported by the popes, and based on loans to the poor, free of interest. Various attempts were made, the earliest in 1361, to introduce this benevolent system into other countries, but in the end interest was everywhere charged by pawnbrokers, though the rates were controlled by legislation.

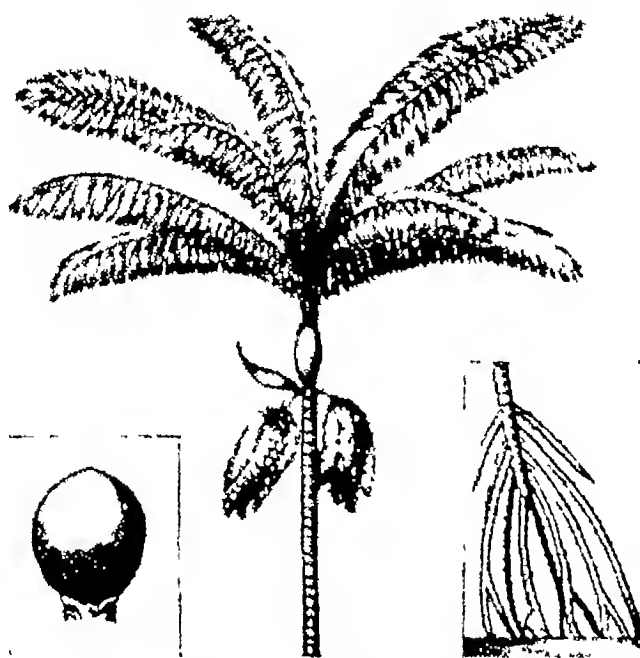
Pawnbroking and banking often went together, and in England, in the reign of Edward I, certain Italian traders gained a foothold on or near the site of Lombard Street. The origin of the three golden balls as the pawnbroker's sign is doubtful; it is at any rate improbable that, as one story goes, they are derived from the arms of the Medici, though that family gained much power by profitable loan transactions with needy potentates. The Lombards enjoyed their monopoly of pawnbroking until exorbitant charges brought their expulsion in the reign of Elizabeth, and the first year of her successor brought the first controlling legislation. Further regulating Acts were passed in 1756, 1783, 1800, 1856, 1859, and 1860, and these were consolidated in the Act of 1872.

For loans over £10 a pawnbroker is subject to the same rules as moneylenders, for those not over £10 to the Pawnbrokers Acts, 1872 and 1922. His profit on loans of 40s. or under is  $\frac{1}{2}$ d. for the first month and for each succeeding month or part of month, on every 2s. or fraction of 2s.; he may charge for the pawnticket, and also, at the time of the pledge, charge  $\frac{1}{2}$ d. for each 5s. or part of 5s. lent. On loans over 40s. he may charge  $\frac{1}{2}$ d. for each month or part of month on each 2s. 6d. or fraction of 2s. 6d. Special contracts, however, may be made with loans exceeding 40s.

Every pawnbroker must take out an annual licence granted by the local authority at a cost of 7 10s. He must also display his rates of interest, and keep his

books in good order. The act also sets out certain things which the pawnbroker must not do, e.g. take an article in pawn from an intoxicated person.

Pledges may be redeemed at any time within one year and seven days, on production of the pawnticket and payment of the loan and accrued interest. Articles unredeemed within the specified term, if pawned for 10s. or less, become the absolute property of the pawn-



Paxiuba Palm. Head of leaves; inset: left, fruit; right, aerial roots

broker, and cannot be redeemed after the time has expired. Those pawned for over 10s. may be redeemed even after the time has expired, unless already disposed of. Full records of all articles sold must be kept for three years for inspection on demand by the holder of the ticket, who may also demand from the pawnbroker, within the same period, any sum received from the sale in excess of the charges due and the expenses of the sale of articles pawned for over 10s. If the sale results in a deficit, the pawnbroker may sue for the difference.

Pawnbrokers are liable for loss by fire, or damage by neglect to pledges in their possession. They also have to exercise great caution with regard to goods which may have been stolen.

**Pawnee.** Confederacy of North American Indian tribes, formerly in Nebraska. Taking part in the Caddoan migration from the S.W., they came into contact with the Algonquins, who enslaved their captives, and in the 17th century bartered them to the white colonists. Hence Pawnee came to denote any aboriginal slave. Only a few hundreds remain, in Oklahoma.

**Pawtucket.** City of Rhode Island, U.S.A., in Providence co. It stands at the head of navigation on both banks of the Blackstone (known locally as the Pawtucket or Seekonk), 4 m. N. of Providence. It is served by the New York, New Haven, and

Hartford rly., and there is steamship connexion with New York. The state's second largest city and manufacturing centre, it forms virtually a single community with Providence and Central Falls. Pawtucket Falls, 50 ft. high, provide water power. Pawtucket has textile manufactures, and contains dyeing, bleaching, and finishing works. It became a city in 1885. Pop. (1950) 81,436.

**Paxiüba Palm** (*Iriarteea ventricosa*) OR ZANONA PALM. Tall tree belonging to the family Palmae, found in the Amazon region and the Guianas. The trunk, which attains a height of 60 to 100 ft., has a considerable bulge in girth about halfway up, and throws out aerial roots about 6 ft. from the ground. The leaves are 12 to 20 ft. long, divided into two rows of leaflets.

**Pax Romana** (Lat., Roman peace). Term applied to the condition of the Roman empire from the accession of Nerva, A.D. 96, to the death of Marcus Aurelius, 180. This period was one of profound peace. The analogous phrase Pax Britannica came into use during the 19th century to denote the peace maintained by British military strength, in particular by the R.N., which kept the high seas open for all peaceful traders.

**Paxton, Sir Joseph** (1801-65). British gardener. Born at Milton Bryant, Beds, Aug. 3 1801 the son of a farmer, he was appointed superintendent of the gardens at Chatsworth in 1826. Here he built the conservatory and lily house, sending an expedition to India which collected



Sir Joseph Paxton, British gardener

80 new orchids and another to N. America which collected pines. Paxton succeeded in bringing to flower at Chatsworth the water lily *Victoria Regia* after Kew had failed; the queen accepted a bloom from his hands. Invited to submit a plan for the Great Exhibition to be held in 1851, he designed for it the Crystal Palace. Knighted in 1851, Paxton was M.P. for Coventry from 1854 until his death at Sydenham, June 8, 1865.

**Pay As You Earn.** Term for a system of income tax deduction on wages and salaries. It was introduced in April, 1944, under the Income Tax (Employment) Act, 1943. All employers had to

deduct from payments of wages and salaries the instalments of tax payable by the employee. Previously the tax had been assessed after the expiration of the period during which it had been earned; half-yearly demands for payment were normally received by the individual several months after he had received the remuneration, which sometimes meant hardship. Some employers had introduced voluntary schemes to mitigate this hardship by deducting tax weekly or monthly, before this plan became compulsory.

Assessment of liability to tax was related to current earnings, varying with the earnings from week to week or month to month. Each individual had a code number dependent on the tax allowances to which he was entitled by personal circumstances. The employer was supplied with tax tables for all the code numbers of his employees and had for each employee a tax deduction card, showing the gross pay to date and the tax payable on it. Each employee should receive an annual assessment based on his income return and tax payments during the preceding year. Arrears of tax may affect the code number.

**Paymaster.** An administrative officer in the navy and army. In the navy the grades range from assistant paymaster (under four years' standing), corresponding to sub-lieutenant, to the paymaster-in-chief, who has equivalent rank to executive captain. They may be distinguished by a white stripe added to the gold cuff stripe or stripes. See Royal Army Pay Corps.

**Paymaster-General.** Government official in charge of a small department which pays out public money in accordance with the votes of parliament, and as requisitioned by the Treasury. He is a member of the government, but not of the cabinet, and is unpaid. He was first appointed after 1660, and perquisites and commissions long made his office perhaps the most lucrative in the public service. In 1835 the office was reorganized and is now of secondary importance. See Treasury.

**Payment of Members.** Term used for the payment of salaries to members of a legislature. In England the payment of members' expenses, as distinct from salaries, dates from Norman times, and was at first defrayed from the constituencies, but lapsed during the Stuart period, when a seat in

the house of commons was regarded as a privilege. With the growth of the Liberal party in the 19th century and the return of members who did not have private incomes, various proposals to pay them were made, and on Aug. 11, 1911, a salary of £400 a year was sanctioned by parliament. In 1921, a bill was introduced to exempt these salaries from income tax, but was defeated by a vote of the house. In 1931, during the financial crisis, the figure was reduced to £360, but it was increased to £380 in 1934 and restored to £400 next year. In 1937 it was raised to £600 a year. Later increases brought it in 1957 to £1,750 a year, subject to tax. Rly. season tickets are allowed for daily journeys between home and Westminster during sessions.

Members of the upper and lower houses of the Canadian parliament were in 1867 given \$1,000 a session; this had been raised to \$8,000 by 1954. An act of 1892 gave members of the New Zealand house of representatives £250 a year, members of the legislative council £150 a year; in 1958 representatives received £1,100 a year plus a basic allowance of £275 for expenses in connexion with parliamentary duties, and various other allowances according to the electorate represented (the legislative council was abolished from Jan. 1, 1951). The Commonwealth of Australia Constitution Act, 1900, gave each member of the house of representatives £400 a year; by 1957 members of both the house of representatives and the senate were paid £2,350 a year plus certain allowances. Salaries of members of the parliaments of the states of Australia in 1956 were: N.S.W., upper house, £500, lower £1,750; Victoria, £1,600 (both); Queensland £2,480 (upper house abolished 1922); South Australia, £1,900-£1,975 (both); Western Australia, £2,120 (both); Tasmania, £1,382 (both).

Representatives and senators of the U.S. congress are paid (in 1957 \$22,500 a year, plus travelling, postal, and clerical expenses).

**Payne, (BEN) IDEN** (b. 1881). British theatrical producer. Born at Newcastle-upon-Tyne, Sept. 5, 1881, he was educated at Manchester grammar school, and joined Benson's company in 1899. After helping Miss Horniman to organize her company for the Gaiety Theatre at Manchester, he produced there, 1907-11. During the First Great War he produced

plays in the U.S.A., becoming visiting professor at the drama school at Pittsburgh and the state university at Iowa. He was director of the Shakespeare memorial theatre, Stratford-on-Avon, 1935-43, then was professor of drama in various universities of the U.S.A. where he also directed Shakespeare festivals.

His daughter (b. 1911), who acted as Rosalind Iden, was for years in Shakespearian repertory as leading lady to Donald Wolfit, whom she married in 1948.

**Payne, JOHN HOWARD** (1791-1852). American actor and playwright. He is chiefly remembered as the author of *Home, Sweet Home*, introduced into the opera *Clari*, 1823. He was U.S. consul at Tunis, 1842-45, and from 1851 until his death.

**Paysandú.** Department of W. Uruguay. It is situated E. of the Uruguay river, which separates it from the Argentine prov. of Entre Rios. It is rich in minerals, yielding gold, silver, copper, and iron. Sheep and cattle are reared, and the vine is cultivated. Area, 5,115 sq. m. Pop. (1953 est.) 90,000.

Paysandú, the capital, was founded in 1772 on the E. bank of the Uruguay river, 282 m. N.W. of Montevideo. It has large abattoirs and carries on a trade in livestock. Pop. (1953 est.) 60,000.

**Payta.** Seaport of N. Peru, in the dept. of Piura. It exports cotton, cotton-seed, goat skins, and hides. The port is specially equipped for traffic in petroleum. There is a short rly. to Piura, the capital of the dept. Pop. 4,000.

**Pea** (*Pisum sativum*). Annual climbing herb of the family Leguminosae. Its seeds and pods are edible, and form one of the most popular vegetables. The origin of the garden pea is unknown, but it is said to have been introduced into England from S. Europe in 1548. The seed is best sown monthly from Feb. to May or June, in a deep rich soil with a little lime. Seeds are sown



Pea. Pods of green pea, showing one split open  
Courtesy of Carters



about 3 or 4 ins. deep and 1 in. apart diagonally for the dwarf kinds, and at a greater distance for the taller sorts, while the rows are from 18 ins. apart for the dwarf kinds and from 4 to 6 ft. apart, according to height, for the taller growing varieties. The plants are usually trained upon brushwood, known as pea-sticks, or across horizontally stretched wires or strings. Dwarf peas need no training, but are apt to be spoiled by violent rains. The variety known as sugar pea has edible pods. See Fruit; Sweet Pea.

**Peabody.** City of Massachusetts, U.S.A. It is in Essex co., 2 m. by rly. W. of Salem. It contains the Peabody Institute, with a fine library and lecture hall. The city is mainly concerned with leather industries, and besides boots and shoes produces gloves, electrical appliances, and cotton goods. Formerly known as South Danvers, it assumed its present name in 1868 in honour of George Peabody (v.i.). It became a city in 1916. Pop. (1950) 22,645.

**Peabody, GEORGE** (1795-1869). American philanthropist. Born at South Danvers, Mass., Feb. 18, 1795, he was employed as a lad in a dry goods store, setting up in business for himself in 1814. Branches were opened in New York and Philadelphia, and in 1837 Peabody came



George Peabody.  
American  
philanthropist

to London, where, retiring from the American business in 1843, he set up as a merchant and banker. The large fortune he had amassed in America he employed in philanthropic work. He gave £150,000 for the London poor, and £500,000 to establish the Peabody buildings. In 1866 he founded the Peabody museum of natural history at Yale, Conn., and the museum of archaeology and ethnology at Harvard. He died Nov. 4, 1869; after lying in state in Westminster Abbey, his remains were taken to America. His statue is behind the Royal Exchange. South Danvers was renamed Peabody in 1868.

**Peabody Museum.** There are two institutions of this name in the U.S.A., each founded by George Peabody in 1866. (1) The Peabody museum of archaeology and ethnology at Harvard has sent out more than 450 expeditions to various parts of the world, with notable

results in Mayan archaeology and the ethnology of the Pacific Islands, Africa, S. America, and the plains and N.W. coast of N. America. (2) The Peabody museum of natural history at Yale is primarily interested in research and teaching in connexion with palaeontology, zoology, and mineralogy. It has one of the foremost collections of dinosaurs in the U.S.A.

**Peabody Trust.** Fund established in 1862 by George Peabody, who gave or left a total sum of £500,000 to trustees to build houses for the working classes of London. Blocks of buildings were erected in various parts of London until there were 30 of them. Improvements to bring them up to date reduced the number of separate dwellings from 8,074 in 1939 to 7,341 in 1956, with about 18,000 inhabitants.

**Peace.** River of Canada. Rising in British Columbia, it passes through the Rockies and flows mainly N. and N.E. through the N. of Alberta. Just N. of Lake Athabaska it joins the Slave, and the united stream empties itself into the Great Slave Lake. Its length is 1,054 m., and its chief tributaries are the Beaton, Finlay, Smoky, Little Smoky, and Parsnip. The river is navigable beyond Dunvegan except for 2 m. near Vermilion Falls. Its basin covers 117,000 sq. m. The Peace River district, which straddles the provs. of British Columbia and Alberta, is rich agriculturally and in minerals, especially coal.

**Peace, CHARLES** (1832-79). British criminal, born in Sheffield, May 14, 1832. He received his first sentence for robbery in 1851. In 1854 he received four years' penal servitude for burglary, and afterwards always worked alone for fear of betrayal. Peace had a remarkable power of disguise. The loss of two fingers of one hand suggested to him the use of a false arm with a hook, an identity mark which he put on and off at pleasure.

On Nov. 29, 1876, Peace committed at Bannercross, near Sheffield, the murder for which he was hanged. At large after a term of penal servitude, he was living, under his own name, next door to an engineer named Arthur Dyson. Bad blood arose between the two

men over Mrs. Dyson, and Peace shot the husband. He then disappeared, and, under the name of John Ward, started a career of burglary in the London suburbs, living in a large house in Peckham and passing as a rich man.



Charles Peace,  
British criminal

One early morning in 1878, a policeman named Robinson came across Peace at work in the grounds of a large house on St. John's Hill, Wandsworth. Peace shot and wounded him but was nevertheless secured and, as John Ward, was convicted at the Old Bailey, Nov. 19, of attempting the life of a policeman, and sent to penal servitude for life. The woman with whom Peace had been living, however, betrayed him, and he was tried at Leeds winter assizes for the murder of Dyson, and sentenced to death. He confessed to many burglaries and at least one murder, that of Constable Cock at Manchester in 1876, for which crime a man named Habron was suffering penal servitude for life at the moment of Peace's confession. Peace was hanged at Leeds, Feb. 25, 1879.

**Peace Ballot.** Referendum organized in Great Britain in 1935 by the League of Nations Union. Five questions were asked: (1) Should Great Britain remain a member of the League? (2) Are you in favour of an all-round reduction of armaments by international agreement? (3) Are you in favour of the all-round abolition of national military and naval aircraft by international agreement? (4) Should the manufacture and sale of arms for private profit be prohibited by international agreement? (5) Do you consider that, if a nation insists on attacking another, the other nations should combine to stop it by (a) economic and non-military measures; (b) if necessary, military measures?

Lord Cecil announced the results at the Albert Hall, June 27, 1935. Over eleven and a half million ballot-papers were returned. The voting is shown below.

Question	Yes	No	Doubtful	Abstentions	Christian Pacifist	Total
1	11,090,387	355,883	10,470	102,425	14,121 17,482	11,559,165
2	10,470,489	862,775	12,062	213,889		
3	9,583,558	1,689,786	16,976	818,845		
4	10,417,329	775,415	15,076	351,845		
5 (a)	10,027,608	635,074	27,255	855,107		
5 (b)	6,784,368	2,351,981	40,893	2,364,441		

**Peacehaven.** Town of Sussex, England, about 6½ m. S.E. of Brighton, and 3 m. S.W. of Newhaven. It stretches about ¾ m. along the South Downs on the Brighton - Newhaven - Eastbourne road. It came into existence as a product of speculative building shortly after the First Great War, and remained largely undeveloped. It is chiefly composed of small villas, bungalows, and huts, built without regard to plan or to its fine position at the summit of the chalk cliffs facing the English Channel.

**Peace Pledge Union.** British branch of the War Resisters' International, founded in Oct., 1934, by Canon H. R. L. Sheppard, George Lansbury, and Brig.-Gen. F. P. Crozier. Members, who pay a voluntary contribution towards the expenses of the union, sign a pledge to renounce war and never to support or sanction another. Membership reached 140,000 in 1939; during the Second Great War over 70,000 members were registered as conscientious objectors, while several thousand refused to accept the awards of the tribunals and were imprisoned. Some accepted non-combatant war service. The offices are at 6, Endsleigh Street, London, W.C.1, and there are branches throughout Great Britain.

**Peach** (*Prunus Persica*). Small fruit-bearing tree of the family Rosaceae. It is a native of Asia, was cultivated before the Christian era, and was introduced into Britain in the 16th century. The flowers are pink, white, and red, and the peach fruit is large, pale yellow and crimson in colour, with softly hairy skin. The nectarine, a variety, is much smaller and smooth-skinned.



Peach. Flowers and, top, fruit and section



There are two types of peaches, known as freestone and clingstone. In the former the flesh parts readily from the stone, but in the latter

fibrous cords from the stone hold the flesh around it. In Great Britain out-of-door peaches will thrive in favoured situations on walls with a S. or S.W. aspect. The fan-shaped trees are planted about 15 ft. apart, in well-drained turfy loam, with a little lime added. If the walls are not trellised or wired, the branches must be trained. Peaches require plenty of water in the summer time, and protection from winter frosts. Red spider is the principal pest. Under glass, peaches are started in pots in a temperature ranging between 45° and 60°, between Jan. and March. The potting mixture consists of loam, crushed bones, and well-rotted manure, and the trees need watering freely during spring and summer. Pruning is rather drastically performed when the shoots are about 2 ins. long. The fruit itself is thinned when it is about the size of a grape. Propagation is by seeds or grafting. There is a double-flowered peach (*Persica vulgaris flore pleno*) which is grown as an ornamental shrub, for the sake of its blossoms, in sunny borders. It thrives in any ordinary soil, and has white flowers.

**Peach Palm** (*Bactris minor*). Tall slender tree of the family Palmae. It is a native of the



Peach Palm. Spray of fruit of *Bactris gasipaes*; inset, single fruit

Amazon region. The trunk is armed with sharp spines, and the leaves are from 2 to 4 ft. long, divided into two rows of slender leaflets a foot long. The egg-shaped, peach-like, scarlet and orange fruit is in large bunches.

**Peacock** (*Pavo*). Genus of the pheasant family. The common peacock (*P. cristatus*) is a native of India and Ceylon. It was introduced into Europe at an early date, and was a favourite table bird with the Romans and in the medieval period.

The peacock is one of the handsomest of birds, especially at the

breeding season, when the male displays his gorgeously eyed train for the delectation of the hens. This train is not the tail, but a prolongation of the upper tail-cover feathers, and when spread may be seen to be supported by the true tail feathers. The peacock breeds readily in captivity. The green or Java peacock is a native of Burma, Malay Peninsula, and Java, and is about the same size as the common peacock but with a more brilliant plumage. See Bird colour plate.

**Peacock, THOMAS LOVE** (1785-1866). British poet and novelist. Born at Weymouth, Oct. 18, 1785, he left school early to enter business in London, but in his leisure acquired a good knowledge of the classics. In 1812 he met Shelley, and was closely associated with him, and appointed his executor. In 1819 Peacock entered the service of the East India Company, rising to be chief examiner 1836-56. The best of his poems is *Rhododaphne*, 1818, which shows the influence of Shelley, but he deserves to be remembered rather for satirical novels, such as *Headlong Hall*, 1816; *Nightmare Abbey*, 1818; *Maid Marian*, 1822; *Crotchet Castle*, 1831. He died at Halliford, near Chertsey, Jan. 23, 1866. One of his daughters married George Meredith (*q.v.*). Peacock's works were edited by H. Cole, 1875, and R. Garnett, 1891; and his life was written by C. van Doren, 1911, and J. B. Priestley, 1927.



T. Love Peacock, British author

**Peak.** Wild tableland of Derbyshire, England, forming the S. end of the Pennine Chain and designated a national park 1951. Highest point is Kinder Scout (2,088 ft.); other heights are Axe Edge, near Buxton (1,807 ft.), and Mam Tor (1,700 ft.). Castleton is regarded as the capital of the Peak, and Chatsworth is called the palace of the Peak. Peveril Castle, near Castleton, figures in Scott's *Peveril of the Peak*. The Peak has no definite limits, although it may be described as the district N. of Buxton. It is a wild, moorland area, watered by a number of streams that feed the Derwent. On it are stone quarries, and grouse are shot on the moors. Peak Forest is a rly. station, 36 m. N.W. of Derby. The Peak Cavern, a cave at Castleton, goes 500 yards into the



limestone. A co. constituency of Derbyshire is called High Peak.

**Peake, FREDERICK GERARD** (b. 1886). British soldier and administrator. Born at Melton Mowbray, he was educated at Fareham and the R.M.C., Sandhurst. Commissioned in the Duke of Wellington's Regiment in 1906, he served in India until 1913, when he was seconded to the Egyptian army to serve with the camel corps. In 1916 he transferred to the R.F.C. Inspector-general of the Transjordan gendarmerie, 1921, he became director of public security in the country, 1923. Peake raised the Arab Legion, which he commanded until his return to England in 1939. In 1942 he became acting inspector of constabulary for England and Wales.

**Pea Nut** (*Arachis hypogaea*). Herb of the family Leguminosae, better known as the ground nut (*q.v.*) or monkey nut.

**Pear** (*Pyrus communis*). Tree of the family Rosaceae. It is a native of Great Britain, and from E. Europe to the Himalayas. The soil in which the pear thrives best is a deep, rich loam, free from clay subsoil. When once established pears liberally repay a weekly dose of solution of nitrate of soda during the summer months. They are propagated in the same way as apples, chiefly by grafting, but the best stock to employ is the quince (*q.v.*), except for standards.

Late pears should never be left on the trees after the middle of Nov., but picked and carefully stored in a well aired room, on wooden shelves, care being taken



Pear. Fruit of cultivated variety

that one fruit does not touch another. They may be artificially ripened when desired by placing them on a sunny shelf in a heated greenhouse. The pear, particularly in an uncooked state, should be avoided by

persons with a tendency to biliousness. Pears are grown in the S. and W. of England for the manufacture of perry, a mildly alcoholic beverage prepared in the same way as is cider from apples. See Perry.

**Pearl.** Secretion deposited by many bivalve molluscs, oysters and mussels, and a few univalves, in the form of a great number of thin layers of calcium carbonate, one upon the other. Whether

found as oval, spherical, or irregularly shaped independent objects, as "blisters" attached to the shells, or as the smooth

*fera*), which also is the principal source of mother-of-pearl, and another kind, *M. fucata*. These yield white, yellowish white, bluish

white, reddish, grey and black pearls. The finest blacks, which are much esteemed, come from the South Seas and the gulf of Mexico. The hammer oysters of the Gambier Is. yield bronzetinted pearls. Pale rose coloured pearls with velvety lines come from the Bahamas. Garnet red, pale and dark brown ones are obtained from the fan mussel (*Pinna nobilis*), blue from the edible mussel, violet from the ark shell (*Arca Noae*), and purple from the *Ammia cepa*.



Pearl. 1. Opening shells to find pearls. 2. Shell containing a fine pearl, found off Turtle Island, 1909. 3. Cluster of Japanese pearl oysters

inner lining of the shells, called mother-of-pearl, the main composition is identical, though in some instances special colouring matter is present. The beautiful iridescent play of colour, pearly lustre or "orient," is due to irregular refraction caused by obstruction to light by the numerous thin layers. Pearls of fine shape are formed within the mantle, or fleshy substance, of the mollusc, while irregularly shaped pearls and blisters are formed between the fish and the shell or even on the shell itself.

Pearls dissolve in acids, discolour if exposed to alkali, or even to constant warmth against human skin. They are light in weight and comparatively soft, the degree of hardness being between 3 and 4. The best pearls are produced by the pearl oyster (*Meleagrina margariti-*

In the trade pearls are known as pear, bell, or drop, according to their shape; those of irregular form are known as buttons, fancy, blisters, or baroques. Paragons are of the size of small walnuts; cherries, or cherry stones; seed, shot, and dust are the smallest.

Imitation pearls are fashioned out of mother-of-pearl, but are easily detected, as the layers are not fully concentric. The finest imitation pearls are made on a principle discovered by Jacquin, of Paris, in 1680. He used hollow beads of colourless glass, coated with a mixture of gelatin and the tiny silvery scales of the bleak (*q.v.*), and filled with wax to give solidity.

"Cultured" pearls are produced by introducing into the flesh of the oyster, usually under the liver, a foreign substance which the oyster

covers with nacre. The Japanese were noted for their development of this branch of the industry.

Most pearl fisheries are found within the tropic seas. In ancient times pearls came chiefly from India and the Persian gulf. Other current sources are the Sulu sea, the coasts of Ceylon and Australia, the shores of Central America, Bahrein, Borneo, Aru Is., New Guinea, Labuan, Timor, New Caledonia, the bay of Mulege, the gulf of California, La Paz, the Caribbean sea, the gulf of Mexico, and Venezuela. River pearls are found in temperate climates in the northern hemisphere; pearls were found in Scotland in 1355. Principal Scottish rivers which have yielded pearls are the Spey, Tay, South Esk, and Forth. Pearls are also found in many parts of the U.S.A., notably in the Mississippi and in Warren co.

Fishing is generally undertaken by divers from boats, armed with knives and bags attached to belts round their waists to contain the oyster shells. In other instances baskets are lowered and hauled up by ropes. Many fishers wear diving dresses, which enable them to remain longer in deep water. In Australia, where pearl oyster beds are laid down in shallow waters, dredging is also adopted. See Australia; Bahrein Islands.

**Bibliography.** The Great Barrier Reef of Australia: Its Products and Potentialities, W. Saville-Kent, 1893; Report on the Pearl Oyster Fisheries of the Gulf of Manaar, W. A. Herdman, 1903; Book of the Pearl, G. F. Kunz and C. H. Stevenson, 1908; Pearls, W. J. Dakin, 1913.

**Pearl.** English poem. It was written about 1370 by the unknown author of Sir Gawayne and the Green Knight, Cleanness, and Patience. Pearl, written in 101 stanzas of 12 lines, tells how the author, grieving at the death of his infant daughter, whom he calls his pearl, sees her in a vision as a grown maiden standing on the farther bank of a river. She comforts and instructs him, and finally shows him the New Jerusalem. Consult editions by I. Gollancz, 1891; C. G. Osgood, 1906; Pearl rendered into Modern English, C. G. Osgood, 1907.

**Pearl.** River of Mississippi, U.S.A. Rising in Winston co., it follows a winding course of 295 m. to the Rigolets, a channel communicating between lakes Borgne and Pontchartrain. It drains an area of 7,250 sq. m. and is navigable for small craft for about one-third of its length, while larger vessels reach Gainesville. In 1816

the Pearl river convention met to petition congress for Mississippi's admission to the union.

**Pearl.** Group of islands in the Bay of Panama, Central America, belonging to the republic of Panama. The largest are San Miguel, Del Rey, San José, and Pedro Gonzales, and there are numerous islets. They were so named from the pearl fisheries, which are actively prosecuted.

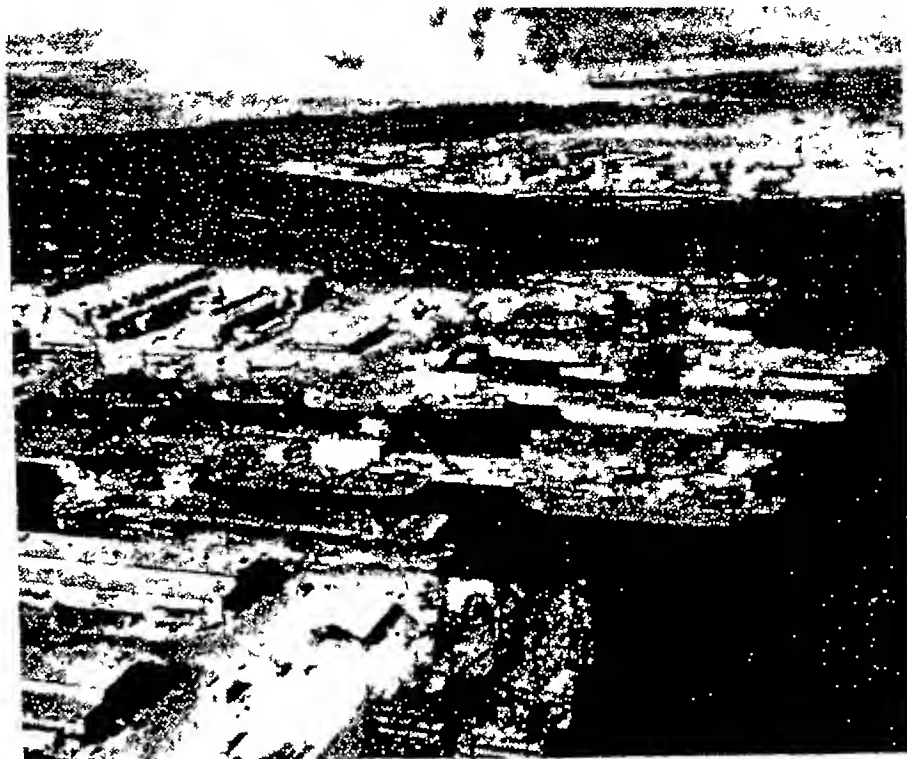
**Pearl.** Type, half the size of long primer, a size smaller than ruby and a size larger than diamond. It is known also as 5 point, and about 15 lines make an inch in depth. It is called both *Parisienne* and *Sédanoise* in French, *Perl* in German, *joly* and *peerl* in Dutch, and *occhia di mosca* in Italian.

**Pearl Ash** OR POTASH. Crude, impure potassium carbonate. It was formerly obtained by burning waste wood, extracting the ashes with water, and evaporating the solution in earthenware pots. Most of the potassium carbonate today is made from potassium chloride by heating with magnesium carbonate, water, and carbon dioxide under pressure to give a double salt of potassium and magnesium. This is decomposed by heating and the potassium carbonate recovered from the filtrate. Pearl ash is used in the manufacture of glass and soap.

**Pearl Fruit** (*Margyricarpus setosus*). Small shrub of the family Rosaceae. It is a native of the Andes. The alternate leaves are broken up into awl-shaped leaf-

lets. The inconspicuous, small green flowers are produced at the base of the leaves, and are succeeded by the minute pearly fruits which give the plant its name.

**Pearl Harbor.** Port of Oahu, one of the Hawaiian group of islands in the Pacific Ocean. Situated 7 m. W. of Honolulu, the



Pearl Harbor. Air view of the U.S. naval base in the Pacific, four years after the Japanese attack in 1941

port is landlocked and provides deep anchorages. Pearl Harbor is the principal U.S. naval base in the Pacific, and has adjacent to it a number of army and marine corps flying fields. Here on Dec. 7, 1941, Japanese aircraft attacked the harbour installations and units of the U.S. Pacific fleet, so bringing the U.S.A. into the Second Great War (*vi.*).

**Pearl Harbor, ATTACK ON.** At 7.55 a.m. (local time) on Dec. 7, 1941, Japanese midget submarines and carrier-borne aircraft made a devastating attack on the U.S. warships and installations at Pearl Harbor. The attack took place before the Japanese declaration of war, which was not made until some hours later, and while Japanese envoys in Washington were still negotiating with the U.S. secretary of state.

As Pearl Harbor lies nearly 4,000 m. from Japan, and some 2,000 m. from the Japanese mandated Caroline and Marshall Is., the forces taking part in the attack must have received orders some days previously. Although the war and navy depts. had sent war warnings to all U.S. posts in the Pacific on Nov. 27, no attempt had been made to put the Pearl Harbor defences at readiness.

There was a complete lack of cooperation between Admiral Kimmel, the naval commander, and Lt.-Gen. Short, the army commander. The army's aircraft warning service was not operating; no regular



Pearl Fruit. Flower-bearing branch of this small shrub. Inset, left, leaf; right, fruit



reconnaissance or inshore patrols were maintained by either service; neither the A.A. nor coastal batteries were manned or supplied with ammunition; and the anti-torpedo net closing the harbour was open. An attack by Japanese submarines and the possibility of Japanese sabotage in Hawaii had been envisaged and a few minor precautions taken; but both commanders, being convinced that the risk of air attack was negligible, deliberately ignored orders from Washington. Shortly after 6.30 a.m. on Dec. 7 a small Japanese submarine was sunk by a U.S. patrol plane and the U.S.S. Ward in the prohibited area of Pearl Harbor, and at 7.45 a.m. a second midget submarine was sighted inside the harbour net defences. On neither occasion did the naval authorities issue an alert or take any precautions. At 7.2 a.m. an n.c.o. under training at the aircraft warning station, which normally closed down at 7 a.m., picked up a large flight of aircraft at a distance of 130 m. N.E. of Oahu. When this was reported 18 mins. later to the central information centre, no action was taken.

The formation, consisting of 21 torpedo-dropping aircraft, 30 dive bombers, and 15 horizontal bombers, divided into three sections, one attacking the naval aerodrome at Kaneohe bay, another the army air bases at Wheeler and Hickham Field, and the third the warships in Pearl Harbor. The dive bombers concentrated on the airfields, and in eight attacks put out of action 150 of 202 naval aircraft and 97 of 273 army fighters and bombers. Owing to the cratering of the runways, few of the surviving army aircraft were able to take off to oppose the enemy. Of the 52 naval aircraft undamaged, 38, in addition to 7 patrol planes already up at the moment of attack, became airborne and engaged. By a coincidence, 18 U.S. reconnaissance bombers from a U.S. carrier arrived at Kaneohe bay while the raid was in progress; four of these were shot down and one disabled, but the remainder took the air.

The attack on Pearl Harbor, where 86 warships of the Pacific fleet were at anchor, was also made in eight runs. One of the battleships immediately opened machine-gun fire and brought down two torpedo planes. Within 10 mins. all ship-borne A.A. batteries had come into action.

The first phase of the Japanese attack lasted half an hour. From 8.25 a.m. until 8.40 a.m. there was a comparative lull. This was ended by a dive and precision bombing attack which destroyed the port and airfield installations. At 9.45 the Japanese withdrew, having lost 40 of their 105 aircraft engaged. Three Japanese submarines of 45 tons were accounted for.

For their comparatively light losses, the Japanese had achieved their object of immobilising for a time the U.S. Pacific fleet. Five battleships, three destroyers, a minelayer, and a large floating dock were either sunk or so seriously damaged that they were militarily useless. Three battleships, three cruisers and a number of smaller craft were temporarily out of action. Of the vessels listed as sunk or damaged, only one battleship became a total loss, and by Dec., 1942, most of the others had been salvaged or repaired. Losses in personnel were particularly heavy: naval and marine corps casualties were 2,117 killed, 876 wounded, 960 missing; those of the army 226 killed and 396 wounded.

On Dec. 16, 1941, Admiral Kimmel and Lt.-Gen. Short were relieved of their commands, and on March 1, 1942, the U.S. war and navy depts. announced that both officers would be court-martialled on charges of dereliction of duty, but that the court martial would be postponed until such time as public safety and interest permitted. No court martial took place, however.

The raid on Pearl Harbor gave Japan air and sea supremacy, and effectively prevented any immediate linking of U.S. and British Far Eastern naval forces.

So insistent was the public demand for an explanation that eight separate inquiries concerning the disaster were made between 1941 and 1945. The final inquiry issued its report, a document of 492 pages, on July 20, 1946, and placed the blame squarely on the two local commanders.

Documents captured during the occupation of Japan and the examination of Japanese officials proved that a surprise attack on Pearl Harbor was originally proposed and planned early in Jan., 1941, by Admiral Yamamote, c.-in-c. of the imperial navy. Early in Sept., 1941, these plans were incorporated into a secret operation order, issued in Nov., when Japan finally decided upon war with the U.S.

The disaster of Pearl Harbor united the diverse elements in the U.S.A. in determination to wage war until Japan and her allies were destroyed, and enabled President Roosevelt to mobilise the country's manpower and resources on a scale which would have been impossible in the First Great War.

David Le Roi

**Pearlite.** Constituent of steel, an intimate mixture of ferrite and cementite. It was first described by H. C. Sorby, who called it the pearly constituent of steel. It may be either granular or lamellar in structure, and, if the latter, the lamellae may be alternately hard and soft. If the polished surface of a steel containing pearlite is etched with acid, and then viewed obliquely in white light, the surface presents a mother-of-pearl appearance; hence the name pearlite. It is characteristic of steel which has cooled slowly from a high temperature. The term is also used to describe similar lamellar microstructures in other alloys. See Steel.

**Pearl Powder.** Crystalline form of calcium sulphate employed in paper making for hardening the surface of paper. It is also known as pearl hardener. A powder made from fish scales, used for giving the effect of pearl to celluloid and xylonite, is known commercially as pearl powder. The term is also used for a cosmetic consisting of bismuth oxychloride.

**Pearse, PATRICK HENRY** (1879-1916). Irish politician. He was born in Dublin, Nov. 10, 1879, his father being English. A leader of the Gaelic revival as a means of advancing Irish Nationalism, he toured Europe and the U.S.A. and then founded a school near Dublin. Here, however, after the transport strike of 1913, the study of arms accompanied that of language, for Pearse was active among the Volunteers. At the Easter rebellion of 1916 he was in command, and though he ordered surrender when the civilian dead numbered 400, he was executed by British authorities, May 3.

**Pearson, SIR (CYRIL) ARTHUR** (1866-1921). British newspaper proprietor. Born Feb. 24, 1866, at Wookey, Somerset, son of the Rev. A. Cyril Pearson, he was educated at Winchester. He began journalism as sub-editor of *Tit Bits*, founded *Pearson's Weekly* in 1890, *Home Notes* in 1894, *Pearson's Magazine* in 1896, and the *Daily Express* (*q.v.*) in 1900. Somewhat later he acquired a controlling



Sir Arthur Pearson,  
British newspaper  
proprietor

amalgamated with the last named the *St. James's Gazette*. Over-taken by blindness, he retired from journalism in 1912 and devoted himself to the welfare of those similarly afflicted, especially of soldiers and sailors, organizing *St. Dunstan's (q.v.)* of which he was the first chairman. He was made a baronet in 1916 and a G.B.E. in 1917. Died Dec. 9, 1921.

**Pearson, JOHN** (1613-86). English divine. He was born at Great Snoring, Norfolk, Feb. 28, 1613, and educated at Eton and King's College, Cambridge, of which he became a fellow. In 1640 he was appointed rector of Thorington. In 1654 he became weekly preacher at S. Clement's, Eastcheap, London, and there delivered the sermons which in 1659 he published under the title of *An Exposition of the Creed*. In 1660 he became master of Jesus College, Cambridge, in 1661 professor of divinity, in 1662 master of Trinity College, and in 1673 bishop of Chester. He died July 16, 1686.



John Pearson,  
English divine

**Pearson, KARL** (1857-1936). British scientist. He was educated at University College School, London, and King's College, Cambridge, and was called to the bar at the Inner Temple, 1882. His interests, however, were largely scientific, and he studied the theories of evolution and heredity, especially from the mathematical standpoint. He was professor of eugenics and director of the laboratory of national eugenics in the university of London. Pearson wrote many books on science, including *The Chances of Death and Other Studies in Evolution*, 1897; *The Grammar of Science*, his most important work, 1899. He died April 29, 1936.

**Peary, ROBERT EDWIN** (1856-1920). American explorer. Born May 6, 1856, at Cresson, Pa., of French and British stock, he entered the U.S. navy as a civil en-

gineer in 1881. Arctic exploration had long been his study, and during 1891-92 he carried out a sledging expedition of 1,300 m. from McCormick Bay to the N.E. coast of Greenland. Other voyages followed, 1893-96; in 1898 he surveyed and charted the coast of N. Greenland; and in 1902 and 1905 he made attempts to reach the North Pole, attaining lat. 87° 6' in 1905.

In 1908 he began the voyage in which he reached the North Pole on April 6, 1909—the first man to do so. F. A. Cook (*q.v.*) had meanwhile claimed that he reached the Pole on April 21, 1908, and supporters of Cook's claim cast doubt on Peary's—without justification, according to a committee of experts appointed by the National Geographical Society in Oct., 1909. In recognition of his achievements Peary was promoted rear-admiral on his retirement in 1911. *Consult* North Pole, R. E. Peary, 1910; *Life*, W. H. Hobbs, 1937.



R. E. Peary,  
American explorer

**Pearyland.** Area of N. Greenland, discovered by Lockwood and Brainard in 1882 and first surveyed by Peary. Its fiords were explored by Rasmussen's second Thule expedition, 1916-17. Most of the year it is icebound but for about 2½ months, July-Sept., it comes to life, producing mosses, lichens, and small flowering plants.

**Peasants' Revolt.** Rising of the peasantry in England in 1381. There was at this time much discontent due to the enactment of the statute of labourers, a consequence of the Black Death, and to other causes. The imposition of a poll-tax brought matters to a head. On May 30 there was an outbreak at Brentwood. On June 2 a more serious movement began. In Kent Wat Tyler, supported by John Ball, appeared as its leader.

Maidstone and Dartford were centres of disorder, while Essex and other eastern counties were also in revolt. Manor houses and manor rolls were destroyed, lawyers singled out for vengeance. The Kentish and Essex rebels marched to London, burned the prisons and other buildings in Southwark, crossed London Bridge, and murdered Simon of Sudbury, archbishop of Canterbury, and the treasurer, Sir Robert Hales. At

Mile End Richard II met them and persuaded some of them to go home. Next day, June 15, there was another meeting at Smithfield, where Tyler was stabbed by the lord mayor, but Richard quieted his followers, who dispersed on the strength of his promise that their grievances should be removed. This, however, was not kept. Meanwhile, the Norfolk rebels had been crushed at N. Walsham by the bishop of Norwich. *See* England: History; Tyler, W. *Consult* Rising in E. Anglia in 1381, E. Powell, 1895; *The Great Revolt of 1381*, C. Oman, 1906; *London Bridge is Falling*, P. Lindsay, 1934; *Nine Days that Shook England*, H. Fagan, 1938.

**Peasants' War.** Rising of the peasantry which took place in Germany in 1522-25. It was due mainly to economic causes, and broke out in the Black Forest area. The rising, however, spread to Franconia, and was especially successful in Thuringia. Roused to action, the princes collected an army, and, led by Philip of Hesse, defeated the Thuringian rebels at Frankenhäusen in May, 1535, their leader, Thomas Münzer, being killed. *See* Germany: History.

**Pease.** Name of a family famous in the industrial life of N. England. The first to attain wealth and position was Joseph Pease, a woollen manufacturer at Darlington about 1760. His son, Edward (1767-1858), helped George Stephenson in his rly. enterprises and became connected with the coal, iron, banking, and other industries in and around Darlington. His sons, Joseph and Henry, were both members of parliament, Joseph being the first Quaker to sit therein. Of the next generation the most prominent members were Sir Joseph Whitwell Pease (1828-1903), created a baronet in 1882, and his brother, Arthur. Both sat in parliament, as did their sons.

Sir Joseph's elder son, Sir Alfred E. Pease, was a great hunter and sportsman, and the younger, Joseph Albert was made Lord Gainford (*q.v.*) in 1916. Arthur's son, Herbert Pike Pease, held office on the Unionist side, and later in Lloyd George's coalition government. In 1923 he became Lord Daryngton and was an ecclesiastical commissioner. Earlier Peases were Quakers and advocates of peace and the abolition of slavery.

**Peat.** Spongy substance of vegetable origin common to almost every temperate country. The larger part of British peat appears



to be composed of mosses, hill peat being mainly sphagnum and andromeda, while lowland is principally hypnum moss. The formation of peat depends upon a particular combination of climatic and topographical conditions. There must be a soil which will retain water at or near the surface, a sufficiently low temperature to prevent rapid evaporation, a temperature not too low to prevent the growth of vegetation, yet low enough to check too rapid a decay. The average temperature best suited for the formation of peat ranges from 42° to 48° F.

The process which converts plant substances into peat is similar to that which has formed the coal measures, but the oldest peat deposits are, geologically speaking, modern compared with coal. Peat bogs cover an area of about 6,000,000 acres in the British Isles, Ireland alone possessing 3,000,000 acres. They vary greatly in depth, in Ireland rarely exceeding 20 ft., while in parts of Wales and on Dartmoor the deposits are as much as 40 ft. deep.

Pure peat, thoroughly dry, contains from 49 to 64 p.c. of carbon,



and has a calorific value rather more than half that of a similar weight of black coal. In most areas peat is cut by hand, with a long, narrow, very sharp shovel. Freshly cut, it contains as much as 80 p.c. of water. The turves or sods are stacked edgewise, leaning one against another, and dried by sun and air. The mechanical cutting of peat has been introduced in some countries, e.g. Eire, Germany, and Russia, where the product has been used for steam generation. Peat can

be burned in its natural air-dried state, milled and compressed into briquettes, or as a dried powder. Other uses are to produce gas for gas engines; as peat moss litter in agriculture and horticulture; and for the extraction of certain kinds of wax. Consult Peat and its Manufacture, Björling and Gissing, 1907; Winning and Utilisation of Peat, A. Hansding, 1921; The Winning, Harvesting and Utilisation of Peat, H.M.S.O., 1948.

**Pebrine** OR MUSCARDINE. Disease affecting silkworms. It was formerly ascribed to the attack of a fungus, but is now known to be caused by a microscopic single-celled protozoan (*Nosema bombycis*). The disease manifests itself by the appearance of dark spots on the skin, the larva becomes languid and stunted, with defective appetite. Most die in the larval stage, but a few contrive to spin a loose cocoon and pupate. If moths emerge from the pupae they are feeble, and their eggs transmit the disease to the next generation. The disease, which is both contagious and infectious, and has at times been epidemic in the silk-producing districts of France and Italy, can be combated only by killing the sick insects. It is prevented by cultivating the larvae out of doors on netted trees. It is estimated that before Pasteur

established its true nature, the disease involved the French silk industry in a loss of £40,000,000.

**Pecan** (*Carya illinoensis*). Alternative name for the American hickory nut (*q.v.*).

**Peccary** (*Pecari*). Genus of ungulate mammals with only three toes on the hind foot. They are natives of America from Paraguay to Arkansas and Texas. Although much resembling small pigs in appearance and gregarious habits, they have no tails. The bones above the foot unite to form a cannon-bone. The most



Peccary. The collared peccary, a tailless mammal of America

familiar species is the collared peccary (*P. angulatus*).

**Pechenga.** See Petsamo.

**Peck.** Measure of capacity for liquids and dry goods. It is equal to two gallons. Under the Weights and Measures Act, 1878, the measure must not be heaped.

**Peckham.** District of London. Part of the bor. of Camberwell, and anciently a manor and village. It is mentioned in Domesday Book, and was formed early in the 7th century. It comprises Peckham Rye and lies N. of Honor Oak, where stood the boundary oak between Kent and Surrey; W. of Hatcham, where is now New Cross; S. of Rotherhithe; and E. of Camberwell Green. Peckham Road, Peckham High Street, and Queens Road (formerly Deptford Lane) connect Camberwell with New Cross. In Camberwell Church Street is S. Giles's church, and in Peckham Road are Camberwell town hall, school of arts and crafts, and the site of the central library. At the corner of Lyndhurst Way is Peckham House, an 18th century mansion, now devoted to the cure of nervous disease. In the vicinity are the S. Metropolitan gas works, founded 1833, and the Licensed Victuallers' Asylum, founded 1824.

As a manor Peckham was successively the property of Westminster abbey, Bishop Odo of Bayeux, William Rufus, Henry I, and Robert, 1st earl of Gloucester. King John hunted in its park, and literary figures such as Donne, Goldsmith, and Browning were residents. From 1840 Peckham lost its rural attractions, being rapidly built over and industrialised. Peckham Rye Park, opened 1894, still preserves some



Peat. Women bagging peat. The conical heaps are termed ruckles, and the peat is set out in this way to dry. Above, left, cutting blocks of peat at Wedmore, Somerset

of the ancient charm in its 42 acres. The Rye is an ancient common of 64 acres, through which ran the river or "rhee"; it is now mostly devoted to allotments. For details of the interesting experiment in social medicine conducted in Peckham, see Pioneer Health Centre.

**Pecksniff**, SETH. Character in Dickens's novel *Martin Chuzzlewit*, who has become the recognized personification of unctuous hypocrisy. An architect and surveyor by profession, he exudes pious, moral, and charitable sentiments, while practising every kind of petty meanness to gain his own selfish ends.

**Pecock**, REGINALD (c. 1395-1460). English bishop. He was educated at Oxford, where he became fellow of Oriel College, and in 1431 he was appointed master of Whittington College, London. He became bishop of St. Asaph in 1444, and was translated to Chichester six years later. He engaged in bitter controversy against the Lollards, preaching against church reform at Paul's Cross, and his utterances brought him into such disrepute that his books were publicly burnt, his name was removed from the privy council, and he was compelled to recant publicly and resign his bishopric in 1458. His later days were spent in retirement at Thorney Abbey.

**Pecos**. River of U.S.A. Rising in the N.E. part of New Mexico, it flows first S.E. and then S. into Texas along the W. scarp of the Llano. There it again assumes a S.E. course, finally entering the Rio Grande, about 37 m. N.W. of Del Rio. It is 800 m. long, but is of little commercial value apart from irrigation. At Hondo and Carlsbad are two irrigation projects of the U.S. national reclamation service, the canals and ditches of which irrigate 30,000 acres. Since 1936 the reclamation service has carried out extensive experiments in erosion control.

**Pécs**. Town of Hungary. Formerly known as Fünfkirchen (Ger., five churches), it is 105 m. S.S.W. of Budapest, and has a large and interesting cathedral. Two of the churches were originally Turkish mosques. The university, one of the best-known in Hungary, was founded at the end of the Middle Ages, and before the Second Great War had over 1,000 students. There is an academy of law. Industries include weaving, tanning, and papermaking; there are large coal mines in the district. Pécs existed in Roman times, and

during the Middle Ages appears under its Latin name of *Quinque Ecclesiae*. During 1543-1686 it was under Turkish rule. During the Second Great War it was one of a number of important places captured by Tolbukhin from the Germans, Nov. 29, 1944.

**Pecten**. Genus of marine bivalve molluscs (*Lamellibranchiata*). It includes about a dozen British species, some of which are used as food and are commonly called scallops or clams. The species are exceedingly numerous, of



Pecten. Marine bivalve

world-wide distribution, and found at all depths down to about 3,000 fathoms. The valves, which have usually an unequal pair of ear-like expansions at the hinge, are variously ribbed and brightly coloured. The animal does not use its foot for locomotion, young specimens flitting through the water like butterflies by opening and closing the valves, and when older attaching themselves to rocks, etc., by byssal threads spun by the foot.

**Pectin**. Gelatinous substance related to the sugars, mucilages, and gums. It is found in such fruits as apples and gooseberries, and in fleshy roots, e.g. carrots and beets. It is this body which causes fruits boiled with sugar to set into jam. To supply the natural deficiency in strawberries, cherries, etc., the manufacturer of jams sometimes adds other gelatinising materials, or combines apple and gooseberry pulp with fruits deficient in pectose bodies. Pectin has a nutritious value similar to that of starch. It may be valuable in the treatment of diarrhoea.

**Pectoral** (Lat. *pectus*, breast). Object worn or laid upon the breast. Ancient Roman bronze breastplates and medieval horse peytrels were defensive.



Pectoral Cross, as used in the Church of England  
By courtesy of the Warham Guild

The Israelitish high-priest's jewelled pectoral (Urim and Thummim) and the Christian pectoral cross were ritual. In ancient Egypt a pylon-shaped plaque was placed upon the breast of the embalmed body. See Breastplate.

**Peculiar** (Lat. *peculiaris*, one's own). Ecclesiastical law term for a parish or church that is not subject to the jurisdiction of the ordinary or bishop of the diocese. Some of these, like the Chapels Royal and Westminster Abbey, are royal peculiars under the direct control of the sovereign, while others were subject to the archbishop or to the greater abbeys. Before the Reformation there were about 300 such peculiars in England, but most of them have been abolished. The court of peculiars is a branch of the court of arches.

**Peculiar People**. Protestant sect, founded in 1838 by James Banyard and William Bridges. They maintain the plenary inspiration of the Holy Scriptures, and emphasise the need for regeneration as the entrance into the Christian life. They also maintain divine healing on a Scriptural basis.

**Pedal Point**. In music, a note that is sustained regardless of any changes of harmony especially in a figure. It is generally, but not invariably, in the bass and the notes customary for it are the tonic or the dominant, which may be used together, forming the so-called pastoral pedal. Owing to its frequent use in organ music the French term is *point d'orgue*.

**Peddar Way**. The traditional name for the best preserved Roman road in East Anglia. Traceable for 12 m. from near Ixworth, Suffolk, to Hockham Heath, Norfolk, it runs thence almost straight for 33 m. through Castle Acre to Ringstead. Here it turns and continues to the Roman camp near Brancaster. See Britain.

**Peden**, ALEXANDER (c. 1626-86). Scottish Covenanter. He became minister of New Luce, Galloway, in 1660, was ejected 1662, and thereafter won a reputation as a wandering preacher-prophet. He visited Ireland, was imprisoned on the Bass Rock, 1673-78, and died at Sorn, Jan. 28, 1686. Buried at Auchinleck, his body was disinterred by dragoons and buried again at the foot of the gallows at Cumnock. See Covenanters.

**Pedestrian Crossing**. Defined path on which pedestrians wishing to cross a road have certain rights over vehicular traffic. The first in the U.K. were introduced in 1934 by L. Hore Belisha, then minister of Transport, and consisted of a "lane" bounded by metal studs fixed into the road surface. Crossings were of two kinds: controlled (i.e. by traffic lights or a policeman) and uncontrolled; the latter



were marked by a Belisha Beacon (*q.v.*) at either end. By the pedestrian crossing places regulations, 1934, pedestrians had legal right of way at uncontrolled crossings.

On Oct. 31, 1951, the black and white striped crossing called a "zebra" crossing was introduced. At controlled "zebra" crossings the pedestrian must wait until the lights are in his favour or until he is signalled by the policeman to proceed. Pedestrians have undisputed right of way on uncontrolled zebra crossings.

**Pedestrianism** (Lat. *pedestris*, going on foot). Art of walking. It includes walking races over relatively short distances, in which the competitor matches his speed, staying power, and judgement against other competitors; and long distance walks, lasting many days, in which the competitors match themselves against the clock. See Barclay, R.; Walking.

**Pedestrians' Association FOR ROAD SAFETY, THE.** British body formed in 1929 under the presidency of Viscount Cecil of Chelwood. Its objects are to protect and preserve the rights and general amenities of all who use the roads on foot. Its h.q. is 44-45, Fleet Street, London, E.C.4.

**Pediculosis.** Affection of the skin caused by the presence of the louse. These animals are insects of the order Anoplura and are exclusively parasites of mammals. There are two genera found on man: *Pediculus humanus*, which has two races, the head and the body louse, named *capitis* and *corporis* respectively; and *Phthirus pubis*, the crab louse. The eggs are laid in small capsules or nits on the hairs of the head or body and are difficult to remove. The lice pierce the skin of the host and draw blood, producing an irritation which may cause scratching and dermatitis and impetigo. The main danger from the louse is that it transmits typhus.

The most effective means of control is by the use of D.D.T. preparations in the form of a dust. This method does not affect the eggs, so a second application may be necessary to kill the young larvae as they emerge. The use of garments impregnated with D.D.T. is even more effective, since the power of killing lice is retained for some weeks after washing. This method was used by British forces during the Second Great War. Derris root also kills eggs.

**Pediment** (formerly periment, perhaps a corruption of pyramid). In classic architecture, the trian-



Pediment of the Panthéon, Paris

gular crown of a portico at the front or rear of a building. The space within the triangle is called the tympanum (*q.v.*), and is often filled with sculpture. The term is also used of similar formations over doors and windows. In Gothic architecture the height of a pediment equals, or exceeds, its breadth, and it is then known as a gable (*q.v.*). Otherwise, the ordinary pediment is enclosed by the long horizontal line following that of the cornice and two raking lines of equal length meeting above it. See Architecture.

**Pediment.** In geology, a gently sloping, smooth rock floor, which may or may not be covered with a veneer of sand or rock fragments and which occurs at the foot of steep mountain ranges in deserts. Isolated rock masses which have escaped the general planing down processes of erosion may rise from the pediment as steep-sided hills referred to as inselberge.

**Pedipalpi.** Creatures formerly grouped with the Arachnida, to which they are closely related. Pedipalpi or whip-scorpions differ from the true scorpions in having head and thorax combined, as in the spiders, from which they differ in having the abdomen segmented. The feelers (palpi) are more or less developed into nippers. There are no poison glands. Pedipalpi occur in damp situations in the tropics; they are insect-eaters. One genus is named tarantula, but should not be confused with the Italian spiders so-named.

**Pedlar.** General term for an itinerant vendor of small wares. The word is of uncertain origin, but may be connected with the old and still colloquial *ped*, a basket. In the U.K. a pedlar is one who sells goods, or his skill in handicraft, *e.g.* tinkering, chair-mending, etc., on foot, without a horse or ass, being thus statutorily distinguished from a hawker, who uses a horse. A pedlar has to obtain annually a certificate from the police. The term pedlars' French is applied to the secret jargon of thieves and vagabonds, and so to any meaningless rigmarole.

**Pedometer.** Instrument for estimating distance traversed on

foot by counting steps taken. It comprises (1) a pendulum which swings with each forward movement of the leg to which the pedometer is attached;

and (2) a train of wheels actuated by a pawl on the pendulum. The amplitude of the pendulum swing must be adjusted to suit the normal stride of the wearer, and this is effected by a micrometer screw limiting the swing. The instrument is usually watch-shaped, and has dials indicating miles, tens and hundreds, besides a main dial calibrated in yards. For short distances its readings are very approximate, but for longer ones it is a useful means of measuring routes, as in military surveying, or in map-making.

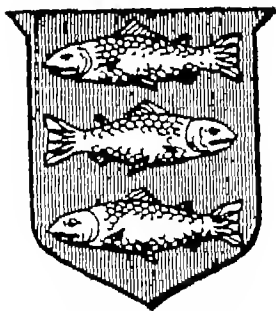
**Pedro** (1334-69). King of Castile, called the Cruel. Son of Alphonso XI, he was born at Burgos, Aug. 30, 1334. By his many crimes, including the torture of his treasurer, Samuel Levi, and the murder by his own hand of Abu Said, usurping king of Granada, and by the suspicious circumstances of his wife's death, he incurred the hatred of his subjects; and his illegitimate brother, Don Enrico, known as Henry of Trastamare, invaded Castile with the assistance of French bands commanded by Bertrand du Guesclin. Pedro fled to Bayonne, where he obtained the help of Edward, the Black Prince. The Castilian and English troops were victorious at the battle of Navarrete in 1367, but after the Black Prince's departure Don Enrico returned and killed Pedro in a quarrel, March 23, 1369.

**Pedro I** (1798-1834). Emperor of Brazil, 1822-31. He was son of John VI of Portugal, and on his father's return from Brazil to Portugal, 1821, was left as prince-regent of the former country. Joining the party demanding independence, he was proclaimed emperor in 1822, and in 1825 the independence of Brazil was recognized. On the death of his father in the following year he became king of Portugal, but at once abdicated in favour of his daughter, Maria. After an outbreak in Rio de Janeiro he abdicated the Brazilian throne, April 7, 1831, and returned to Portugal.

**Pedro II** (1825-91). Emperor of Brazil, 1831-89. He was born at Rio de Janeiro, Dec. 2, 1825, son of Pedro I, and was proclaimed emperor on his father's abdication, 1831. The empire settled down to a

long period of peace under him until he was dethroned after the revolution of 1889, when he retired to Europe. He died in Paris, Dec. 5, 1891. In 1921 the remains of Pedro II and his wife were taken to Rio de Janeiro for re-interment. A study by M. W. Williams was published in 1938.

**Peebles.** Royal and mun. burgh and co. town of Peeblesshire, Scotland. It stands on the river Tweed, 23 m. S. of Edinburgh by rly. Anciently a residence of the Scottish kings, Peebles occupies a well-sheltered position in the valley of the Tweed and at-



Peebles arms

tracts many visitors. Queensberry Lodging, which belonged to Lord Yester, was purchased in 1857 by William Chambers, who gave it to the town; through the generosity of Andrew Carnegie it was reconstructed and enlarged. The new buildings, reopened in 1912, contain the council chambers, town hall, library, museum, and art gallery. There are a hydropathic establishment and a good golf



Peebles, Scotland. Parish church, built in 1887

course. Tweed and woollen cloth are manufactured. Market day, Tues. Pop. (1951) 6,013.

**Peeblesshire** OR **TWEEDDALE.** Inland county of Scotland. Its area is 347 sq. m. From the valley of the Tweed, which has its source in the S.W. and traverses the entire breadth of the county E., the surface rises on each side in a succession of grass-clad hills scored by fertile valleys. In the S. there has been much afforestation. On



**Peeblesshire.** Map of this inland county of S. Scotland the S. border is Broad Law (2,754 ft.), the highest summit in the county. The chief streams are the Biggar, Manor, Lyne, and Eddleston, all affluent to the Tweed. Peebles is a pastoral county, and sheep-rearing and the manufacture of woollen textiles are the main occupations. British Rlys. afford transport facilities. Peebles is the county town. The county is part of a county constituency made up of the counties of Midlothian, Peebles, Roxburgh, and Selkirk. Pop. (1951) 15,232.

**LITERARY ASSOCIATIONS.** The co. town claims several celebrated sons. William and Robert Chambers were born there; as also were Thomas Smibert (1810-54), poet and miscellaneous writer, editor of Chambers's Journal, 1837-42; John Veitch (1829-94), author of History and Poetry of the Scottish Border and poems inspired by Tweedside; and Henry Calderwood (1830-97), writer on philosophy. The county has been rich in writers of famous song. James Nicol (1769-1819), poet and miscellaneous writer, was born at Innerleithen.

Sir Walter Scott used the county of Peebles as a background for two of his stories. The Black Dwarf and St. Ronan's Well. It also inspired Thomas Tod Stoddart (1810-80) and J. C. Shairp in The Bush Aboon Traquair.

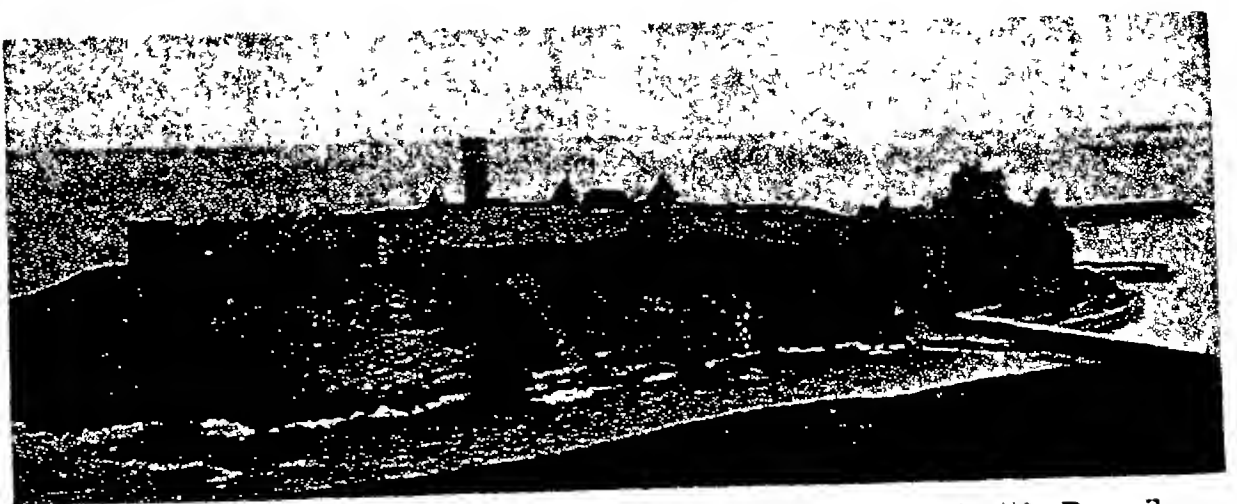
**Peekskill.** City of New York, U.S.A., in Westchester co. It stands on the E. bank of the Hudson, at the S. end of the Highlands, 41 m. N. of New York City, and is served by the New York Central rly. Known as the "largest village in the U.S.A." before becoming a city in 1940, it is finely placed, with Crugers Park and the

Blue Mt. reservation of the Westchester state parks to the S. and Bear Mt. park, 4 m. N. on the opposite bank. Settled by the Dutch, 1667, it was burned by the British, 1777. Pop. (1950) 17,731.

**Peel** OR **PELE.** In medieval architecture, a small tower or keep. Such towers were common on the borders of Scotland and Wales, and served as places of refuge for the inhabitants in case of raids.

**Peel.** Coast town and holiday resort of the Isle of Man. It is 11 m. N.W. of Douglas, on the local railway. There are manufactures of sails, nets, boats, etc., but the people are principally engaged in the fisheries. Joined to the mainland by causeway is St. Patrick's Isle, which contains the ruin of Peel Castle, mentioned in Scott's Peveril of the Peak, and the remains of S. German's cathedral, a cruciform structure dating partly from the 12th century. Market day, Sat. Pop. (1951) 2,582.

**Peel, WILLIAM ROBERT WELLESLEY PEEL, 1ST EARL** (1867-1937). British politician. Eldest son of the 1st viscount Peel (v.i.), he was born Jan. 7, 1867, educated at Harrow and Balliol College,



Peel, I.O.M. View showing ruins of Peel Castle, mentioned in Scott's Peveril of the Peak





1st Earl Peel,  
British politician

for Taunton from 1909 until he succeeded to the viscounty in 1912. After active service in the First Great War he was appointed to the national service department in 1917, was under-secretary for War and Air, 1919, and chancellor of the duchy of Lancaster, 1921. Secretary for India, 1922-24 and 1928-29, he was on the India and Burma round-table conferences, presiding over the latter; was chairman also of the wheat commission, 1932, and the commission on Palestine, 1936. Advanced to an earldom in 1929, he died Sept. 28, 1937, and was succeeded by his only son, Arthur (b. May 29, 1901).

**Peel, ARTHUR WELLESLEY PEEL**, 1ST VISCOUNT (1829-1912). British statesman. Born Aug. 3, 1829, youngest son of Sir Robert Peel, he was educated at Eton and Balliol College, Oxford, and became Liberal M.P. for Warwick in 1865. He was parliamentary secretary to the poor law board, 1868-71; patronage secretary to the Treasury, 1871-73; and under-secretary for home affairs, 1873-74. In 1884 he was chosen Speaker, an office he held with distinction until 1895, when he retired, and was created a viscount. Chairman of the commission on licensing laws, 1896, he signed a minority report advising the reduction of the number of licensed houses, compensation being raised by a tax on them instead of on



Arthur Wellesley Peel  
Elliot & Fry

the general public; this proposal was ultimately the basis of legislation passed in 1904. Peel died Oct. 24, 1912, and was succeeded in the viscounty by his son William (v.s.), who became 1st earl Peel.

**Peel, GERALD GRAHAM** (1877-1937). British composer. Born at Pendlebury, Manchester, Aug. 9, 1877, and educated at Harrow and University College, Oxford, he became a pianist and composer of songs. The latter included In Sum-

meritime on Bredon, and other Songs of a Shropshire Lad (settings of A. E. Housman's poems); The Lute-Player; Kew in Lilac Time; and a song-cycle, The Country Lover. Peel died Oct. 16, 1937.

**Peel, JOHN** (1776-1854). English huntsman. Born at Caldbeck, Cumberland, Nov. 13, 1776, he died



John Peel, the Cumberland huntsman  
From a print

there, Nov. 13, 1854, and is buried in the churchyard. He indulged a passion for fox-hunting for over 55 years, and is the hero of the song D'ye ken John Peel? written by John Woodcock Graves about 1828. Consult Songs and Ballads of Cumberland, ed. S. Gilpin, 1866; John Peel, J. M. Denwood, 1932.

**Peel, SIR ROBERT** (1788-1850). British statesman. He was born near Bury, Lancs, Feb. 5, 1788, the son of a wealthy cotton manufacturer, and was brought up in an atmosphere of intelligent Conservatism. He was educated at Harrow and Christ Church, Oxford, and after a brilliant university career entered parliament in 1809. At 24 he became secretary for Ireland; six years later he retired from the Liverpool ministry, but was chairman of the bank committee which carried the resumption of cash payments in 1819. In 1822 he returned to the ministry as home secretary and carried several valuable reforms, including a great reduction in the number of capital offences, improvements in the prisons, and the establishment of the Metropolitan Police, who received the popular appellations of Peellers and Bobbies after his names.

When Canning became prime minister in 1827, Peel and Wellington refused to join him, and

thenceforward Peel may be regarded as the leader of the Tory party in the house of commons. He joined the Wellington ministry, 1828, and supported the duke in passing Catholic emancipation, being convinced against his will of the necessity for that measure by the election of O'Connell for Clare. When Wellington in 1832 endeavoured to form a Tory ministry to pass a less drastic reform bill than that of Grey, the effort was made abortive by Peel's refusal to join; only after Grey's bill was passed did he accept it as an irrevocable *fait accompli*. In 1830 he had succeeded to a baronetcy, and he was M.P. for Westbury until 1833, then until his death for Tamworth.

Twice, in 1834 and in 1839, Peel was called to office as prime minister, but each time was obliged to resign after a few weeks; not till 1841 was he able to take office with a decisive Conservative majority behind him in the commons. For five years he was prime minister. He advanced in successive budgets along the path towards free trade upon which Huskisson had entered before him—on the principle of increasing revenue by reducing tariffs so that goods were cheapened and the demand for them increased, whereby an actual increase of revenue was attained. He taxed incomes over £150 a year, and carried in 1844 the Bank Charter Act. Irish Catholics were permitted to endow their own religion; and the boundary between Oregon and Canada was settled.

The Corn Law, however, was the grand problem—the problem of maintaining the prices deemed necessary for the preservation of the agricultural industry, and at the same time meeting the demand for cheap bread. Peel relied upon the sliding scale, but this proved a failure. Events were hurried by the rains of July, 1845, which “rained away the Corn Laws” and brought the potato blight. The Irish potato famine of 1845, coupled with the gradual working upon his mind of the arguments of the Anti-Corn Law League, convinced Peel that cheap bread was more necessary than the protection of agricultural interests.

Since the ministry had taken office as a protectionist government, Peel was unwilling himself to



Sir Robert Peel,  
British statesman

introduce a measure repealing the Corn Laws, though he succeeded in persuading most of his colleagues in the cabinet of the necessity for the change. But a Whig or Liberal cabinet could not be framed, and Peel himself courageously introduced the measure which was supported by the Whigs and vigorously opposed by the no-surrender section of the Tory party. At the very moment when the bill for the repeal of the Corn Laws passed its final stage Peel was defeated in the house on an Irish question and resigned, June 29, 1846. The Liberals came into office and were there maintained by the general support of the Peelites, with whom they coalesced in 1852. Sir Robert, though outside the ministry, remained the most notable figure in the house until he died on July 2, 1850, from injuries caused by a fall from his horse. His statue is in Parliament Sq. *See* Corn Laws.

*Bibliography.* Speeches in the House of Commons, 4 vols., 1853; Memoirs, ed. Earl Stanhope and E. Cardwell, 1856; Political Life, T. Doubleday, 1856; Memoirs of Peel, F. Guizot, 1857; Lives, F. C. Montague, 1888; J. R. Thursfield, 1898; Peel from his Private Papers, ed. C. S. Parker, 1899; Life and Times, T. Lever, 1942.

**Peele, GEORGE** (c. 1558–98). English poet and dramatist. Son of a London silversmith, he was educated at Christ's Hospital and Broadgates Hall and Christ Church, Oxford. His court pastoral, *The Arraignment of Paris*, influenced *A Midsummer Night's Dream*, his historical play *Edward I*, Shakespeare's *Henry IV*, and his *Old Wives' Tale*, the theme of Milton's *Comus*. His works, which also include the scriptural *David and Bethsabe* and a number of pageants, possess poetic beauty, glow of fancy, and fervour of patriotism, but no high creative faculty. They were edited by A. H. Bullen, 1888.

**Peenemünde.** German research station on the Baltic coast, 60 m. N.W. of Stettin. Spread out among woods along a 4½-m. stretch of shore, the establishment specialised in aircraft, radiolocation, and armament development, being the most important centre of its kind in Germany. It was heavily bombed by the R.A.F., for the first time Aug. 17, 1943, when Gen. von Chamier-Glisenski and a number of other scientists were killed. An air photograph taken here, Nov. 8, 1943, showed an experimental flying-bomb on a landing ramp, confirming, with other air photographs, information,

already received in London through underground channels, of the production of pilotless air-planes. Peenemünde was occupied May 5, 1945, by the Russians, in whose zone of occupation it subsequently lay; the Russians continued experiments here.

**Peeping Tom.** *See* Godiva.

**Peep o' Day Boys.** Organization of Protestant Ulstermen formed to resist the Catholic Defenders. They were so named from their habit of breaking into the houses of their victims at dawn. Their violence caused much trouble in Ulster, 1784–95. From 1790 many Peep o' Day Boys were absorbed in Orange lodges.

**Peerage** (Lat. *par*, equal). Literally, the body of peers. The word is now applied, however, to peers and members of their families, i.e. to those who can succeed to titles. In the U.K. there are five ranks in the peerage, duke, marquess, earl, viscount, and baron. By courtesy, dukes are Most Noble, marquesses Most Honourable, and all other peers Right Honourable.

The possession of a peerage is confined to countries ruled by a monarch, because the root idea is that of personal service to him. Spain has had and Sweden has peerages like that of the U.K. Austria and Hungary had them before the First Great War. France had a peerage before the country became a republic. A peer of France was one on whom the king conferred that dignity, and from 1814 to 1848 there was a chamber of peers.

Originally a peer simply meant an equal, but its present use dates from the time it was restricted to the possessors of hereditary titles. This came about through the separation of the greater and lesser barons in the 13th century. The former, members of the house of lords, secured the right (abolished 1948 by the Criminal Justice Act) to be tried by their equals, or peers, and thus became known as peers. A peer and a member of the house of lords are not quite the same, as the bishops and the law lords are lords of parliament, but not peers. Peers are created by letters patent, prescribing the conditions under which a title may descend.

A peerage may be limited to sons and their descendants, or be extended, as was that of Earl Roberts, to daughters, or, as was that of Earl Kitchener, to a brother. The early peers owed their position to tenure of land, but this was soon superseded by a writ of

summons. There are peers of Scotland, whose numbers cannot be increased; peers of Ireland who can sit in the house of commons; and peers of the U.K. A peerage is said to be dormant when the heir does not assume the title. It becomes extinct when the heirs, according to the patent, fail. Baronies can fall into abeyance. A number of old titles (e.g. the earldom of Erroll, 1452; the barony of Beaumont, 1309) descend in the female line in the absence of a male heir. Some English lords of appeal in ordinary have been made life barons since 1856; and an act of 1958 empowered the sovereign to confer a life peerage on any man or woman carrying with it the right to sit and vote in the house of lords: this was the first recognition of a woman's right to sit and vote as a peer. Works giving details of peers and their families include Burke's, Cokayne's, and Debrett's Peerages. There is also a Jacobite peerage.

**Peer Gynt.** Dramatic poem by Ibsen, first published in 1867. Peer Gynt himself is one of the half mythical and fantastical personages from the peasant life of modern Norway, a typical man of indecision, ever afraid of doing the irretrievable. The work is alternately satirical, fantastic, and finely poetical. English translations have been made by Archer and Norman Ginsbury; and Ralph Richardson played the lead in a revival at the New Theatre, 1944. Grieg made the drama the theme of a well-known suite.

**Peewit** or **PEWIT.** Either form is another, and onomatopoeic, name for a green plover. *See* Plover.

**Pegasus.** In Greek mythology, the winged horse which sprang from the blood of the Gorgon Medusa, when her head was struck off by Perseus. Pegasus created Hippocrēnē, the spring of the Muses, with a kick of his hoof, but his further connexion with the Muses, often alluded to in modern poetry, has not been traced earlier than the Italian poet Boiardo (d 1494). *See* Bellerophon.

**Pegasus.** In astronomy, one of the constellations. It is easily recognizable by the four stars which mark a great square, and is contiguous to the zodiacal constellations Pisces and Aquarius. The top left-hand corner of the square is not in Pegasus, but in the constellation of Andromeda. The others are Alpha, Beta, and Gamma Pegasi, whose ancient names were Markab, Scheat, and Algenib. The constellation contains a number of



variable stars, double stars, and a well-known stellar cluster.

**Peggotty.** Name of a family in Charles Dickens's novel *David Copperfield*. Clara, the devoted nurse of David, is always called Peggotty to distinguish her from Clara, David Copperfield's mother. Daniel Peggotty, her brother, is a great-hearted boatman, whose household, living in an old boat on Yarmouth beach, included his nephew Ham Peggotty, his niece Little Em'ly, and the forlorn Mrs. Gummidge.

**Pegmatite** (Gr. *pēgma*, anything fastened together). In geology, a rock of quartz and feldspar, etc., occurring in granites, etc., and having a coarse texture. Pegmatites occur as dikes or veins and often contain valuable minerals, e.g. garnet, beryl, boron, uranium, cerium, as well as oxide of iron. From them is obtained feldspar.

**Pégoud, ADOLPHE** (1887-1915). French airman. Daring in experiment, he was the first to fly upside down, at Juvisy, Sept. 1, 1913, in a Blériot monoplane; and three weeks later he first looped the loop. Joining the French flying corps in the First Great War, he was killed near Belfort in an air battle, Aug. 29, 1915.

**Pegu.** Div., dist., and town of Burma. The div. comprises the lowland N.W. of the Gulf of Martaban, across the valley of the lower Sittang to that of the Irawadi above the delta. The dist. occupies the W. side of the lower valley of the Sittang, and rice is the sole crop. The town is on the Pegu river and is the rly. junction N.E. of Rangoon for the lines to Moulmein and Mandalay. It was formerly the capital of the Pegu empire, overthrown by Burma, 1757. Captured from British Imperial forces by the Japanese, Feb. 28, 1942, Pegu was retaken by the British 14th army, April 30, 1945, the Japanese making a stand there to guard their last escape route for motor transport from Lower Burma to Siam. Area, division, 13,258 sq. m.; district, 4,404 sq. m. Pop., division, 2,961,249; district, 582,959; town, 25,400.

**Péguy, CHARLES PIERRE** (1873-1914). French writer. He was born at Orléans, Jan. 7, 1873, and early became interested in social problems, publishing under the name of Pierre Deloivre a treatise, *De la Cité Socialiste*, 1897. In the same year he collaborated with Marcel Baudoin in a poetic drama, *Jeanne d'Arc*. He later became director of a Socialist bookshop in Paris, and

agitated for a revision of the Dreyfus verdict. At his bookshop in the Rue de la Sorbonne he published *Les Cahiers de la Quinzaine* during 1900-14. His other works include *Le Mystère de la Charité de Jeanne d'Arc*, 1910; and *La Tapisserie de S. Geneviève et de Jeanne d'Arc*, 1913—mystical writings which much influenced his contemporaries. Péguy was killed in the battle of the Marne, Sept. 5, 1914. Consult *Notre Cher Péguy*, J. and J. Tharaud, 1926; P. and Les *Cahiers de la Quinzaine*, D. Halévy (trans. R. Bethell), 1946; C.P.: *The Pursuit of Salvation*, Y. Servais, 1953.

**Pegwell Bay.** Inlet of the coast of Kent, England. It is 1 m. W. of Ramsgate harbour, and is famous for shrimps. Prominent features include the beacons marking the channel into Richborough harbour. The bay formed the subject of a painting by William Dyce, exhibited in 1860 and purchased 1894 by the National Gallery.

**Peiho** OR HAIHO. River in Hopeh prov., China. It rises in the spurs of the Inshan Mts., and after an E. course it turns S.E. and, flowing to the W. of Peking, empties at Taku into the Gulf of Chih-li. The Peiho, with the other rivers that join it at Tientsin, 47 m. from its mouth, drains an area of 56,000 sq. m., which suffers from time to time from extensive floods. In 1901 the Chinese government undertook to improve conditions below Tientsin, and numerous works have been completed.

**Peiping** (Ch., northern peace). Name given by the Chinese to Peking (*q.v.*) during 1928-49.

**Peipus** OR CHUDSKOE. Lake of N.W. Russia. It is bordered by Estonia S.S.R. and Pskov region of the R.S.F.S.R., and is divided into three parts, Lake Peipus proper, Lake Pskov, and the so-called Warm Lake, a narrow channel connecting the two. Its total length is 90 m., and it discharges its waters into the Gulf of Finland by the Narova. In early times it formed the chief frontier between the Slavs and the Finnish Chuds, whence its local name, lake of the Chuds. Its fish is sold in local markets and in Leningrad. When the Germans invaded Russia on June 22, 1941, their armies advanced rapidly to the Stalin line, the right flank of which was pro-

tected by Lake Peipus. After fruitless attempts at forcing the line frontally, the Germans swung their left wing to advance on both sides of the lake. By the end of Aug. the Germans had gained control of Estonia and directly threatened Leningrad. Early in 1944 the Russians began an offensive against the Germans in Estonia, and by Feb. had passed Lake Peipus.

**Peirithous.** In Greek legend, king of the Lapithae (*q.v.*). He led his army to battle with Theseus, but on seeing each other the two leaders embraced and thereafter became the firmest of friends. After taking Helen from Sparta, they descended into Hades to carry off Proserpine or Persephonē as a wife for Peirithous. They were seized by Pluto, from whom Theseus was afterwards rescued by Hercules, but Peirithous remained for ever in chains.

**Peisistratus.** Tyrant of Athens, 560-527 B.C. A kinsman of Solon, he at first supported his relative; but, being ambitious of power, allied himself with the "Men of the Mountains," the poorest and most dissatisfied class in Athens. Appearing one day in the market-place covered with blood, he declared that he must have an armed bodyguard.

The guard was voted to him by his supporters, and when it had increased from 50 to 400 men he seized the Acropolis and assumed the supreme power. Though twice driven out by opposing factions, by 545 he firmly established himself as autocrat of Athens. His rule was enlightened and he was a patron of art and literature.

**Pekan** (*Martes pennanti*). Fisher-marten, wood-shock, or black fox of N. America. It is a carnivorous mammal of the family Mustelidae, allied to the pine-marten and the sable. It is the largest of the martens, the head and body measuring 2 to 2½ ft. and the tail 14 to 18 ins. It has a distinctly fox-like appearance, and is blackish brown in colour. Formerly plentiful throughout the U.S.A., it occurs only in the N.E. and in British Columbia



Pekan. Large marten, native to North America

